english

Tractors

F60-F60GE
F70-F70GE
F80-F80GE
F75-F75GE-F75XL
F85-F85GE-F85XL
F95-F95GE-F95XL
F105-F105GE-F105XL

Operator's manual

Publication OM 9-10613 GB

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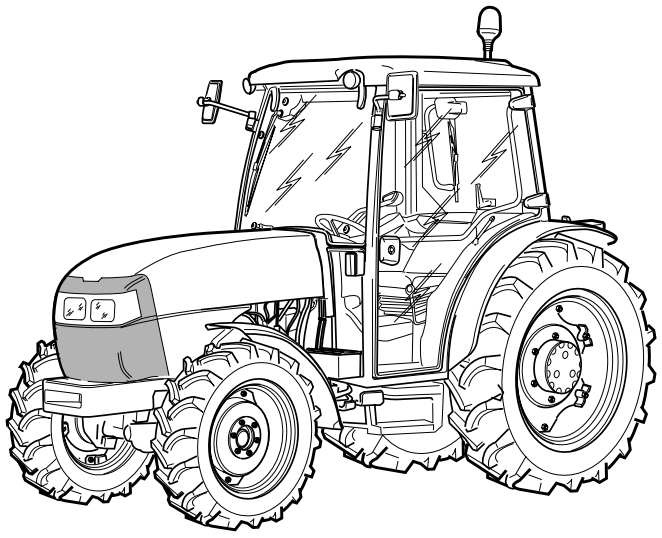
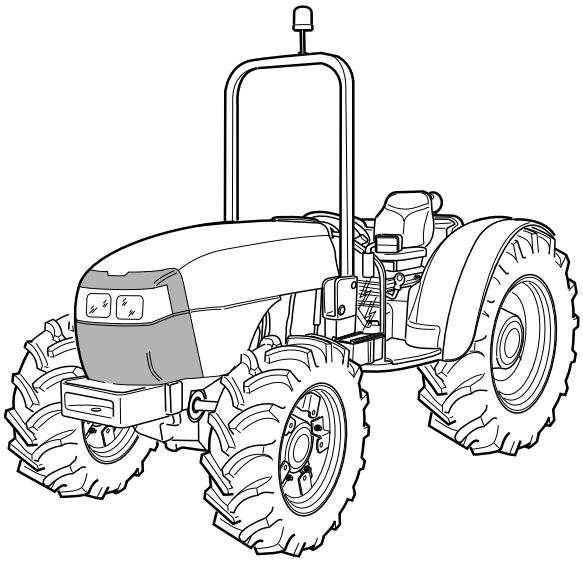
Valid for the following tractor models:

For tractors with cab or platform model:

Orchard

F60 - F60GE
F70 - F70GE
F80 - F80GE
F75 - F75GE - F75XL
F85 - F85GE - F85XL
F95 - F95GE - F95XL
F105 - F105GE - F105XL





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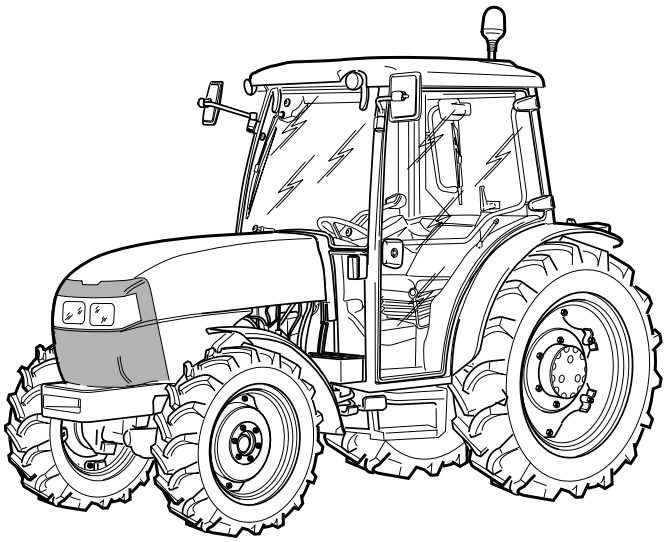

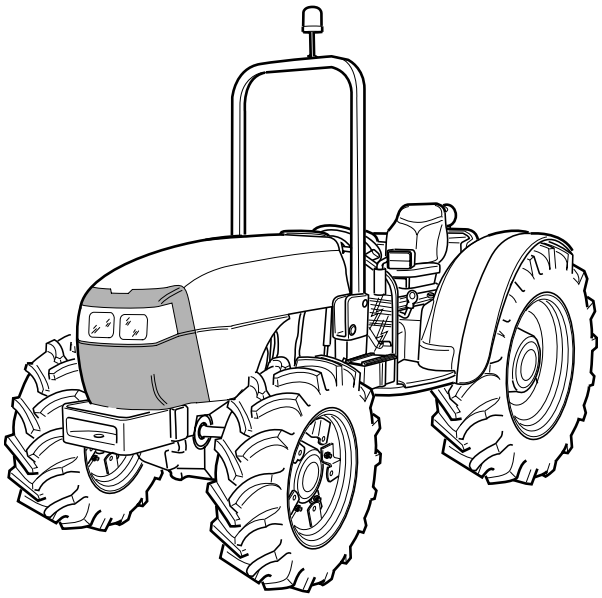

***WARNING:** If the tractor is fitted with a cab that is not approved by the tractor's maker, the warranty concerning the modified functional units becomes null and void (safety frame, electric and hydraulic systems, etc.). Further, it is not possible to check for compliance with noise level standards and with technical approvals.*

CALIFORNIA
Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

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Tractor identification

Your tractor is identified by a serial number stamped on the rear side of the transmission housing and on the bonnet. The engine serial number is stamped on the engine block.

Always state the chassis and engine serial numbers to ensure prompt and efficient service when ordering spare parts or when asking for technical explanations or other information.

Chassis serial number (Fig. 1-3) .....

Engine serial number (Fig. 1-1) .....

Cab serial number .....

Type of tractor (Fig. 1-2) .....

Owner / Operator .....

Address of dealer .....

.....

Delivery date .....

Warranty expiry date .....

NOTE: *Look after this Operation and Maintenance Manual carefully and consult it whenever in doubt.*

This publication has been written in compliance with International Standard ISO 3600 'Guide for: Information, contents and presentation of operation and maintenance manuals supplied with tractors and machinery for agricultural and forestal use'.

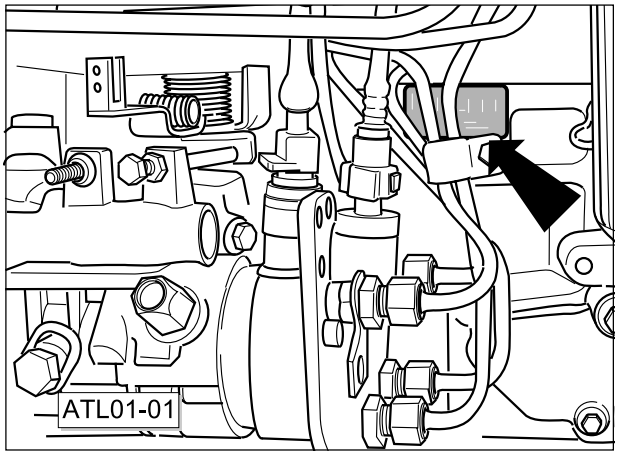


Fig. 1-1 - Type and chassis number (on engine block).

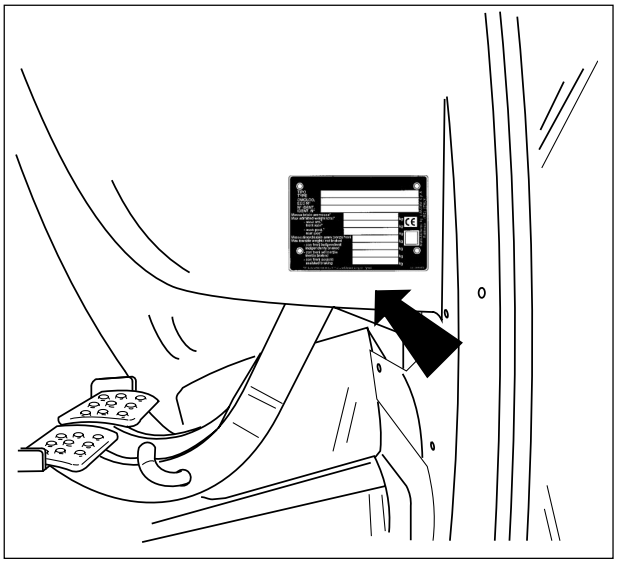


Fig. 1-2 - Type of tractor and chassis number (on dashboard lower panel).

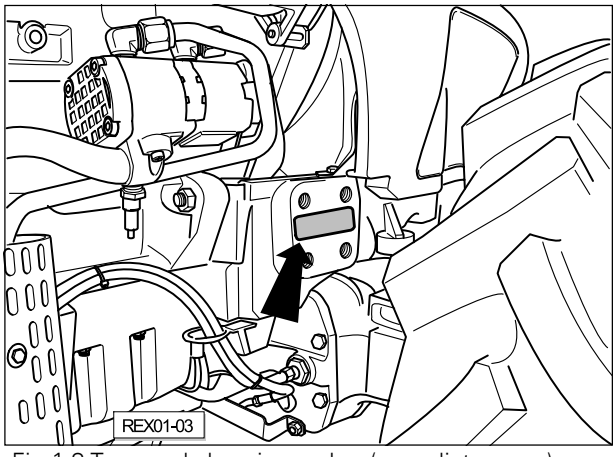


Fig.1-3 Type and chassis number (on radiator core).

Chapter 2
Introduction, warranty and safety notes

INTRODUCTION

NOTE: *This book is published for worldwide distribution, and the availability of equipment shown either as basic or accessory may vary according to the territory in which the tractor is to be operated. Full details of equipment available in your area can be obtained from your Dealer.*

The purpose of this book is to enable the owner and driver to operate the tractor in a safe manner. Providing that the instructions are followed carefully, the tractor will give years of service in our tradition.

The installation of the product by the Dealer gives the opportunity to ensure that these operating and maintenance instructions are understood. Always consult your Dealer if you do not understand any part of this book. It is important that these instructions are understood and observed. Daily maintenance should become a routine, and a record of hours in service should be kept.

When new parts are required it is important that only genuine service parts are used. Our authorized Dealers supply genuine parts and can give advice regarding their fitment and use. Extensive damage may occur as a result of the fitment of parts of inferior quality. Customers are advised to buy their service parts only from an authorized Dealer.

Owing to wide variations in operating conditions, it is impossible for the Company to make comprehensive or definitive statements in its publications regarding performance or methods of use of its machines, or to accept liability for any loss or damage which may result from these statements, or from any errors or omissions. If the tractor is to be used for abnormal conditions which may be detrimental (e.g. deep water or paddy fields) consult your Dealer for special instructions, or the warranty may be invalidated.

These tractors are designed solely for use in customary agricultural operations (intended use).

Use in any other way is considered as contrary to the intended use. The tractor manufacturer accepts no liability for any damage or injury resulting from misuse and these risks must be borne solely by the user.

Compliance with, and strict adherence to, the conditions of operation, service and repair as specified by the manufacturer also constitute essential elements for the intended use.

These tractors should be operated, serviced and repaired only by persons familiar with all their particular characteristics and who are acquainted with the relevant safety rules (accident prevention).

Customers are strongly advised to use an official authorized Dealer in connection with any service problems and adjustments that may occur.

WARRANTY, PRE-DELIVERY and INSTALLATION

The Company, when selling new goods to their Dealers, gives a warranty which, subject to certain conditions, guarantees that the goods are free from defects in material and workmanship. Since this book is published for worldwide circulation, it is impossible to detail the exact terms and conditions of warranty that apply to a retail customer in any particular country. Purchasers of new equipment should request full details from their supplying Dealer.

In accordance with the Company policy of continuous improvement to its machines, alterations in the specifications of machines may be made at any time without notice. The Company accepts no responsibility for discrepancies which may occur between the specifications of its machines and the descriptions thereof contained in its publications.

A Dealer is required to carry out certain activities when supplying a new tractor. These consist of a full pre-delivery inspection to ensure that the tractor supplied is ready for immediate use, and full instruction in the basic principles of operation and maintenance of the tractor. These instructions will cover instruments and controls, routine maintenance and safety precautions. All persons who will be concerned with the operation and maintenance of the machine should be present for these instructions.

NOTE: *The tractor manufacturer will not accept responsibility for any claim resulting from the fitment of non-approved parts or attachments, or unauthorized modification or alteration.*

WARRANTY PROCEDURE

Correct installation, coupled with regular maintenance, will do much to prevent breakdowns. If, however, operating trouble is experienced during the warranty period, the following procedure must be adopted:-

Immediately notify the Dealer from whom you purchased the tractor, quoting the Model and Serial Number. It is most important that there should be no delay, and you should realise that, even where the original failure is covered by warranty, if the failure is not repaired immediately, warranty cover may not apply.

Provide your Dealer with as much background information as you can. It will help him to know how many hours service has been achieved, the type of work on which you are engaged and the symptoms of the trouble.

It should be noted that normal maintenance services such as tuning, brake/clutch adjustments, and the supply of materials used to service the tractor (oil, filters, fuel and antifreeze) are not covered by terms of the warranty.

PARTS WARNING

The fitment of non genuine parts may result in a part of substandard quality being used. The tractor manufacturer will not take the responsibility for any loss, damage or liability resulting from the fitment of such parts, and, if fitted during the normal warranty period the manufacturer's guarantee may be invalidated.

IF YOU MOVE

Only the official Dealer from whom you purchased the tractor is responsible for the protection afforded by your warranty and, where possible, you should always take the tractor to him for repair. If, however, you move to another area or if your tractor should be working temporarily at some distance from the Dealer from whom it was purchased, you are recommended to obtain from the original Dealer the name and address of the Dealer nearest to your new location and to ask for arrangements to be made for outstanding service warranty commitments to be transferred to the latter. If you have left the area in which the original Dealer operates and have not made arrangements with your new Dealer, the latter will readily provide assistance in an emergency but you will be charged at normal rates for any work undertaken unless:

a. You make it clear that the warranty has not expired, and

b. You give the repairing Dealer the opportunity to make suitable arrangements with the retailing Dealer.

SERVICE AFTER WARRANTY

During the warranty period, you should have all your repairs and maintenance performed by your Dealer. This ensures that a detailed check is kept on the progress and performance of your new tractor.

In order to obtain the best results from your tractor, it is important that regular maintenance and service checks continue after the warranty period has expired. Make use of your local Dealer for all major tractor services; a trained engineer will spot any problems between one service and the next.

The mechanics are regularly trained and updated on the product, servicing techniques and the use of modern service tools and diagnostic equipment. They receive regular Service Bulletins, have all Workshop Manuals and other such technical information to ensure that the repair or service is to the standard required.

SAFETY

The safety of the operator is one of the main concerns in designing and developing a new tractor. Designers build in as many safety features as possible. However, every year many accidents occur which could have been avoided by a few seconds thought and a more careful approach to handling farm machinery and implements.

Read and implement the safety instructions detailed in the next section of this book.

WARNING: *In some of the illustrations used in this Operator Instruction Book, panels or guards may have been removed for clarity. Never operate the tractor whitout these components in position. If the removal of panels or guards is necessary to make a repair, they MUST be replaced before operation.*

SAFETY ALERT SYMBOLS AND TERMS

This safety alert symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

The safety alert symbol identifies important safety messages on machines, safety signs, in manuals or elsewhere. When you see this symbol, be alert to the possibility of personal injury or death. Follow the instructions in the safety message.

Why is SAFETY important to you?

★ ACCIDENTS DISABLE and KILL ★

★ ACCIDENTS are COSTLY ★

★ ACCIDENTS can be AVOIDED ★

SAFETY - TRACTOR and IMPLEMENT

- **The tractor is a source of power - Mechanical and hydraulic.**
- **On its own, the tractor is of little practical value. Only when used in conjunction with an implement or other attachment does it become a working unit.**
- **This instruction book is compiled to cover those safe working practices that are associated with the base tractor operation.**
- **It does not cover all operation and safety instructions relevant to all known implements and attachments that may be fitted at the time of tractor delivery or at some future date.**
- **It is essential that operators use and understand the relevant instruction manual of such implements and attachments.**

SAFETY - INTRODUCTION

This safety section of your Operator Instruction Book is intended to point out some of the basic safety situations which may be encountered during the normal operation and maintenance of your PLATFORM or CAB tractor, and to suggest possible ways of dealing with these situations. This section is NOT a replacement for other safety practices featured in other sections of this book.

Additional precautions may be necessary depending on attachments used and conditions at the work site or in the service area. The tractor manufacturer has no direct control over tractor application, operation, inspection, lubrication or maintenance. Therefore is is YOUR responsibility to use good safety practices in these areas.

SAFETY - A WORD TO THE OPERATOR

It is YOUR responsibility to read and understand the safety section in this manual before operating your tractor. You must follow these safety instructions that take you step by step through your working day.

In reading this section, you will note that illustrations have been used to highlight certain situations. Each illustration is numbered and the same number appears in the text in parenthesis. This number is placed at the end of the written text that refers to the illustration and is made up of two digits, separated by a hyphen: the first digit designates the chapter, the second one the figure number in that chapter (e.g.: Fig. 2-34 = Figure 34 of chapter 2).

Remember that YOU are the key to safety. Good safety practices not only protect you, but also the people around you. Study the features in this manual and make them a working part of your safety program.

Keep in mind that this safety section is written only for this type of machine. Practice all other usual and customary safe working precautions, and above all - REMEMBER - SAFETY IS YOUR RESPONSIBILITY. YOU CAN PREVENT SERIOUS INJURY OR DEATH.

SAFETY - DANGER, WARNING and CAUTION

Whenever you see the words and symbols shown below, used in this book and on decals, you MUST take note of their instructions as they relate to personal safety.

***DANGER:** The symbol and the word DANGER indicate an imminently hazardous situation which, if not avoided, will result in DEATH OR VERY SERIOUS INJURY.*

***WARNING:** The symbol and the word WARNING indicate a potentially hazardous situation. If the instructions or procedures are not correctly followed it could result in DEATH OR SERIOUS INJURY.*

***CAUTION:** This symbol and the word CAUTION indicate a potentially hazardous situation which, if not avoided, may result in MINOR INJURY'.*

IMPORTANT: *The word IMPORTANT is used to identify special instructions or procedures which, if not strictly observed, could result in damage to, or destruction of the machine, process or its surroundings.*

NOTE: *The word NOTE is used to indicate points of particular interest for more efficient and convenient repair or operation.*

SAFETY - DECALS

***WARNING:** DO NOT remove or obscure Danger, Warning, Caution or Instruction decals.*

Replace any Danger, Warning, Caution or Instruction Decals that are not readable or are missing. Replacement decals are available from your Dealer in the event of loss or damage. The actual location of these Safety Decals is illustrated at the end of this section.

If a used tractor has been purchased, refer to the illustrations at the end of this section to ensure that all the safety warning decals are in the correct position and are readable.

SAFETY - FOLLOW A SAFETY PROGRAM

For safe operation

For safe operation of an agricultural tractor, you must be a qualified and authorized operator. To be qualified you must understand the written instructions supplied in this Operator Instruction Book, have training, and know the safety rules and regulations for the job.

Some regulations specify, for example, that no one under the age of 18 years (according to European Rules) may operate power machinery. This includes tractors. It is your responsibility to know what these regulations are, and obey them, in the operating area or situation.

These will include, but are not limited to, the following instructions for safe tractor operations.

***WARNING:** An operator should not use alcohol or drugs which can change his/her alertness or co-ordination. An operator on prescription or 'over the counter' drugs needs medical advice on whether or not he or she can properly operate machines.*

Observe the following precautions

- NEVER allow children or unqualified persons to operate your tractor. Keep others away from your area of work.
- Securely fasten your seat belt when the tractor has a safety frame in the upright position or is fitted with a cab.
- Where possible, avoid operating the tractor near ditches, embankments and holes. Reduce speed when turning, crossing slopes, and on rough, slippery, or muddy surfaces.
- Stay off slopes too steep for safe operation.
- Watch where you are going, especially at row ends, on roads, and around trees.
- DO NOT permit others to ride on the tractor or the implement unless an approved passenger seat is fitted.
- Hitch only to the drawbar and recommended hitch points, and never above the centre line of the rear axle.
- Operate the tractor smoothly - no jerky turns, starts or stops. When the tractor is stopped, apply the parking brake securely.
- Never modify or remove any part of the equipment and never use attachments unless they are properly matched to your tractor.

SAFETY FRAME

A Safety Structure and seat belt is fitted as standard equipment to the platform tractor at the time of factory assembly. If the safety frame was deleted by the original purchaser or has been removed, it is recommended that you equip your tractor with a Safety Structure and a seat belt. Safety frames are effective in reducing injuries during overturn accidents. A tractor overturning without safety frame can result in serious injury or death (Fig. 2-1).

Depending on laws in force in the various markets, a seat belt may be installed. Always raise the safety frame before fastening the seat belt.
If a fold-down safety frame is installed, DO NOT wear a seat belt when the safety frame is in the folded down position. NEVER keep the safety frame in the folded down position when working with the tractor.

Operation

- Before using the tractor ensure that the safety frame frame is not damaged, that it is securely fastened to the tractor, and, if a hinged section is fitted, that it is in the raised position and secured.
- If the safety frame has been removed from the tractor, or folded down for a specific operation, it must be refitted or erected immediately using the proper hardware and applying the recommended torque value.
- DO NOT ATTACH chains, ropes or cables to the safety frame for pulling purposes; this will cause the tractor to tip backwards. Always pull from the tractor drawbar.
- If a seat belt is installed, always wear your seat belt - adjusted snugly except when operating with a folded down safety frame or if the safety frame has been removed (Fig. 2-2).
- Check che seat belt for damage. A damaged seat belt must be replaced (Fig. 2-2).

Damage to the safety frame

If the tractor has rolled over or the safety frame has been damaged (such as striking an overhead object during transport), the safety frame must be replaced to provide the original degree of protection.

After an accident, check for damage to the safety frame, operator's seat, seat belt and seat belt mountings. Before you operate the tractor, replace all damaged parts.

DO NOT WELD, DRILL, BEND OR STRAIGHTEN THE SAFETY FRAME. To do so reduces the protection it offers.

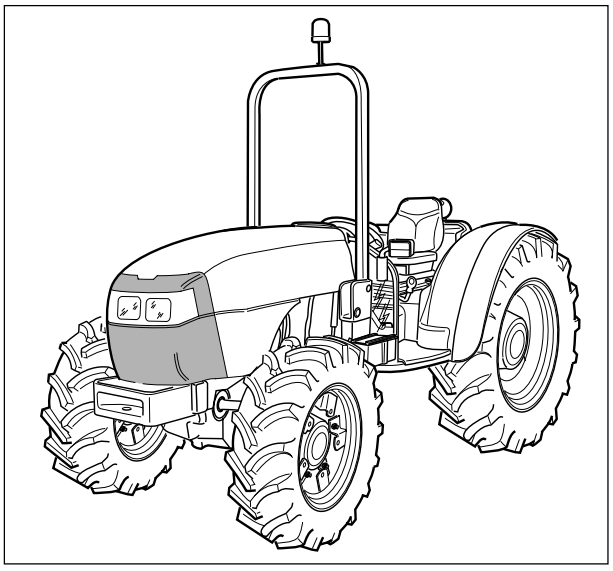


Fig.2-1

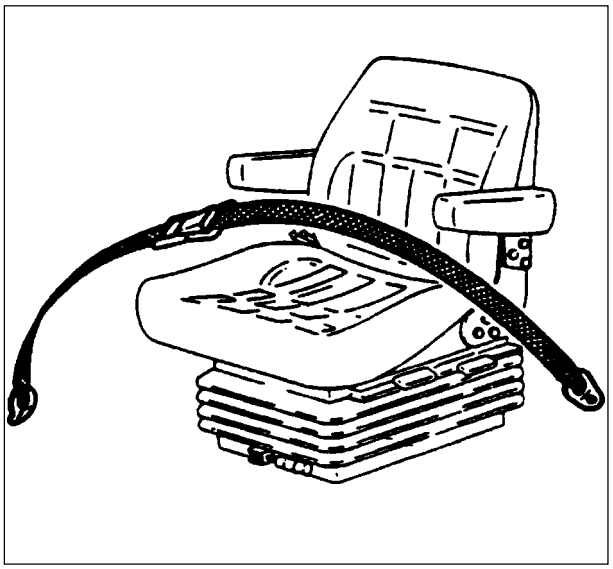


Fig.2-2

SAFETY - CAB

The cab has been designed for fitment to this series of tractors and meets all the legal requirements of cab safety and noise levels.

The cab conforms to the various international safety standards. The cab must NEVER be drilled, or modified to install accessories or implements. Welding components to the cab or repairing damaged components is NOT PERMITTED. Never attach chains or ropes to the main frame of the cab for pulling purposes.

SAFETY - PREPARE FOR SAFE OPERATION

Protect yourself

Wear all the protective clothing and personal safety devices issued to you or called for by job conditions. Don't take chances (Fig. 2-3).

You may need:

- A hard hat.
- Safety glasses, goggles or face shield.
- Hearing protection.
- Respirator or filter mask.
- Inclement weather clothing.
- Reflective clothing.
- Heavy gloves (neoprene for chemicals, leather for rough work).
- Safety shoes.

DO NOT wear loose clothing, jewellery or other items and tie up long hair which could catch on controls or other parts of the tractor.

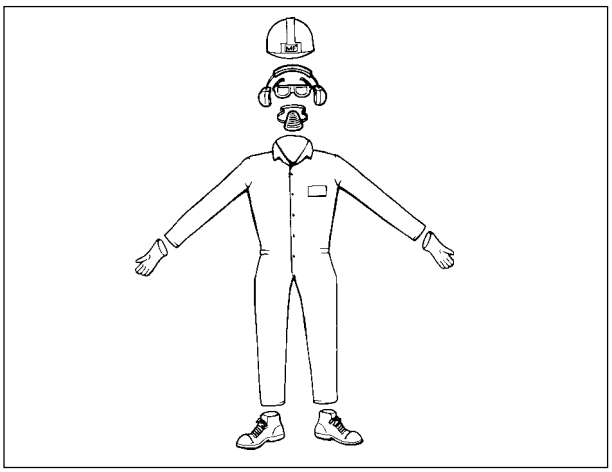


Fig.2-3

Learn where fire extinguishers and first-aid or emergency equipment is kept and where to get help in a hurry. Make sure you know how to use this equipment (Fig. 2-5).

Know your equipment

Know your tractor. Know how to operate all equipment on your machine and the implements and attachments used with it. Know the purpose of all the controls, gauges and dials. Know the rated load capacity, speed range, braking and steering characteristics, turning radius, and operating clearances.

Keep in mind that rain, snow, ice, loose gravel, soft ground, etc. can change the way your tractor operates.. *Under poor conditions, slow down and be extra careful, engage four-wheel drive, if fitted.*

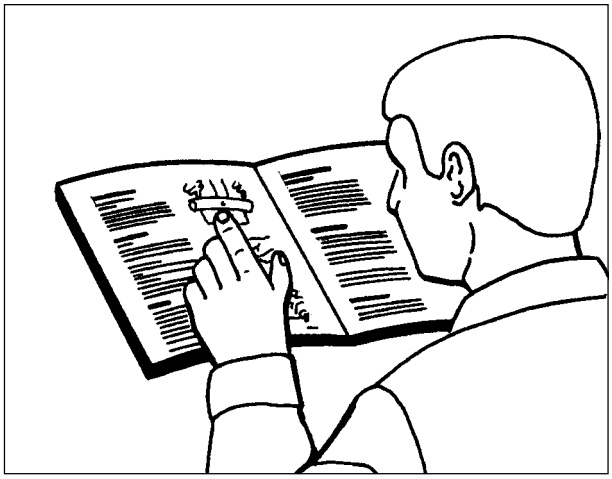


Fig.2-4

Study the **DANGER, WARNING** or **CAUTION** safety signs on your tractor and the information signs also.

READ THIS OPERATOR INSTRUCTION BOOK BEFORE STARTING THE ENGINE.

STUDY IT BEFORE YOU START WORK (Fig. 2-4).

IF THERE IS SOMETHING IN THE MANUAL YOU DON'T UNDERSTAND, ASK SOMEONE (such as your equipment Dealer) TO EXPLAIN IT TO YOU.

IMPORTANT: *This manual covers general safe practices for agricultural tractors. It must always be kept with the tractor. For further copies contact your Dealer.*

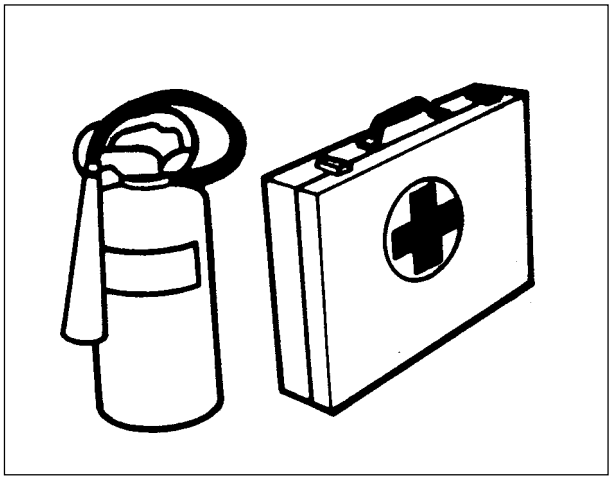


Fig.2-5

Use all available protective devices

Keep all protective devices in place and securely fastened. Make certain all guards, shields and safety signs are properly installed, as specified, and are in good condition.

To help keep you and others around you safe, your tractor should be equipped with:

- Safety belt. It must always be mounted in protection posizion (Fig. 2-6). A seat belt is recommended according to law requirements on the respective market when ROPS is erected.
- Tractor PTO shield.

Your tractor may also need:

- Rear view mirrors.
- Fire extinguisher.
- Safety frame with FOPS (Falling Object Protective Structure), protective enclosure or sun screens. Remember FOPS are protection from light falling objects and are not intended as protection from large falling objects such as large round bales or fence rails. For front loader operation see the corresponding Manual.
- SMV (Slow Moving Vehicle) emblem. Additional guards, lights or decals and and additional alarm (Fig. 2-38 and 2-39).

Know which devices are required for safe operation of your tractor. Use them. Make sure they are in place and in good condition. NEVER remove or disconnect any safety device.

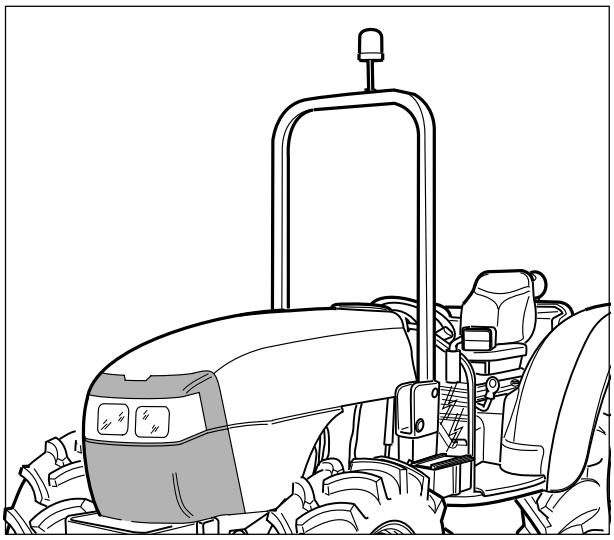


Fig.2-6

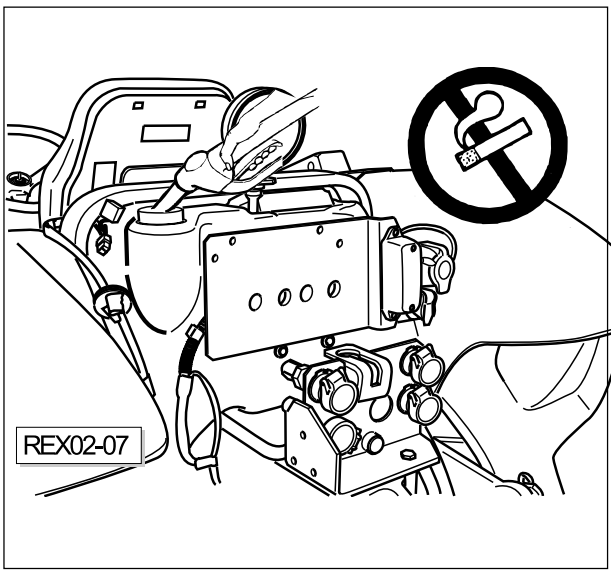


Fig.2-7

Check the equipment

Before you begin your working day, take time to check your tractor and ensure that all systems are in good operational condition.

- DO NOT smoke while refuelling the tractor. Keep any type of open flame away (Fig. 2-7).
- Check for loose, broken, missing, or damaged parts. Have everything put into good repair. Make certain all safety devices are in place.
- Check safety frame and seat belt for damage. A damaged safety frame or seat belt MUST be replaced.
- Ensure that implements and attachments are properly installed and that the tractor and implement PTO RPM ratings match.
- Check the tires for cuts, bulges and correct pressure. Replace worn or damaged tyres. Check foot and parking brakes for proper operation. Adjust if necessary.

- Stop the engine and wait for it to cool before refuelling.
- Check the engine oil level and add oil if required.
- Perform all maintenance procedures outlined in the maintenance and adjustment section of this manual.
- Check that the PTO drive locking devices are latched.
- Check that the tractor PTO shield and driveline guards are in place and operating properly.
- Check the tractor and implement hydraulic system. Have any leaks or damaged parts repaired or renewed.

WARNING: Diesel fuel or hydraulic fluid under pressure can penetrate the skin or eyes and cause serious personal injury, blindness or death. Fluid leaks, under pressure, may not be visible. Use a piece of cardboard or wood to find leaks. Never use your bare hand. Wear safety goggles for eye protection. If any fluid is injected into the skin, it MUST be surgically removed within a few hours by a doctor familiar with this type of injury (Fig. 2-8).

Before applying pressure to the fuel or hydraulic system, be sure all connections are tight and that lines, pipes, and hoses are not damaged. Before disconnecting fuel or hydraulic lines, be sure to relieve all pressure.

Make sure that all hydraulic lines are correctly installed and not tangled.

WARNING: Liquid cooling systems build up pressure as the engine gets hot. Before removing the radiator cap, stop the engine and let the system cool.

- Check the engine cooling system and add coolant as required.

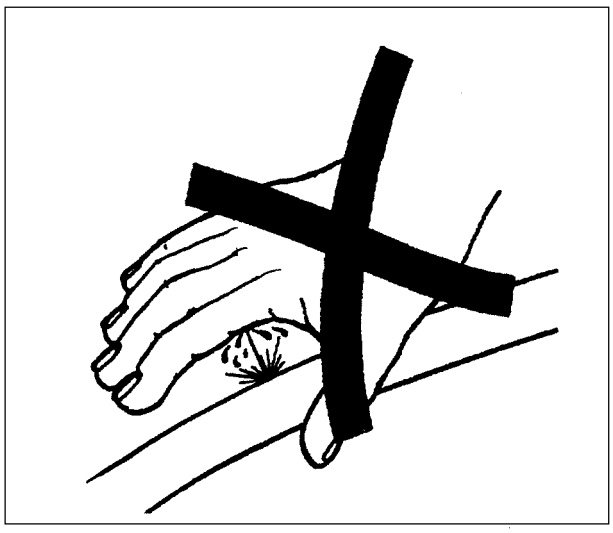


Fig.2-8

Clean the tractor

- Keep work surfaces and engine compartments clean.
- Before cleaning the machine, always lower implements to the ground, place transmission in neutral, engage the parking brake, shut off the engine and remove the key.
- Clean steps, pedals and floor. Remove grease or oil. Brush away dust or mud. In winter, scrape away snow and ice. Remember - slippery surfaces are dangerous.
- When plastic parts need to be cleaned (such as console, instrument panel, monitors, indicators etc..), do not use petrol, paraffin, diluents etc.
  They could cause discoloration, cracking or warping of the cleaned parts..
  These parts should ONLY be cleaned with water, neutral soap and a soft cloth.
- Remove and store implements, keys, hitches etc. in their proper places.

Protect the environment

- It is illegal to pollute drains, water courses or soil. Use authorized waste disposal facilities, including civic amenity sites and garages providing facilities for disposal of used oil. If in doubt, contact your local authority for advice.

- To get to know the correct methods to dispose of oils, filters, tyres etc. contact your Dealer or the local agency for waste recycling.

- Only for North America:

  The safety sheets of each material give information on chemicals contained in a product, procedures to use it safely, first-aid and procedure to be followed in case of leakage or spills. In all North America such safety sheets are available at the Dealer's.

  Before any maintenance on the machine, refer to the above mentioned safety sheets for fluids, oils etc. used in this machine. The sheets inform about risks and safe maintenance procedures. We strongly recommend to follow these indications during any maintenance operations.

- Disposal of the tractor: The tractor is made up of parts subject to rules and laws for their disposal. When the tractor is not used any more, it must be disposed of through proper agencies according to such rules. Do not pollute the environment with the tractor or its parts.

SAFETY - SERVICING THE TRACTOR

- DO NOT service the tractor while the engine is running or hot, or if the tractor is in motion (Fig. 13).

- Before making adjustments to, or servicing the electrical system, disconnect the battery cables, negative (-) cable first.

- To prevent fires or explosions keep open flames away from the battery or cold weather starting aids. To prevent sparks which could cause explosions use jumper cables according to instructions.

- When making repairs or adjustments it is recommended that you consult your Dealer, and have the work carried out by trained personnel.

- The implement and/or tractor must be supported on suitable wooden blocks or stands, NOT a hydraulic jack.

- Check all nuts and bolts periodically for tightness, especially wheel hub and rim nuts. Tighten to the prescribed torque values.

- Check the power steering reservoir regularly and top-up as necessary with an approved oil.

- Check the brakes regularly, top up the reservoir and/or adjust where necessary. Make sure that the brakes are evenly adjusted, especially when using a trailer.

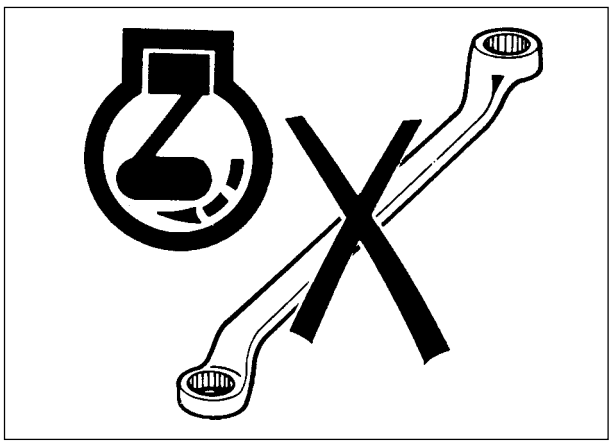


Fig.1-9

SAFETY - STARTING

Warn bystanders before starting.

Before starting, walk all around the tractor and any attached equipment. Make sure that no one is under it, on it, or close to it. Let other workers and bystanders know you are starting up and don't start until everyone is clear of the tractor, implements and towed equipment.

Ensure that all bystanders, **particularly children**, are in a safe position before starting the engine.

Mount and dismount properly

Always use 'three point contact' with the machine, and face the machine when you mount it. Three point contact means both hands and one foot or one hand and both feet are in contact with the machine at all times during mounting and dismounting.

Clean the soles of your shoes and wipe your hands before climbing on. Use handrails, grab handles, ladders or steps (as provided) when mounting or dismounting.

NEVER use control levers as a hand hold and NEVER step on foot controls when mounting or dismounting.

NEVER attempt to mount or dismount from a moving tractor. NEVER jump off a tractor in any circumstances,

Start safely.

WARNING: Before starting the engine make sure there is plenty of ventilation. Never operate the engine in a closed building. The exhaust fumes may cause asphyxiation (Fig. 2-10).

Always start the engine from the operator's seat with all the transmission levers and the PTO lever in neutral.

Make sure that the tractor dual brake pedals are locked together at all times unless you are making turns in the field which require independent use of the brakes. Make sure the brakes are properly adjusted so that both brakes engage at the same time.

Adjust the seat, fasten the seat belt (where applicable as outlined in this manual), apply the parking brake and put all controls in neutral before starting up.

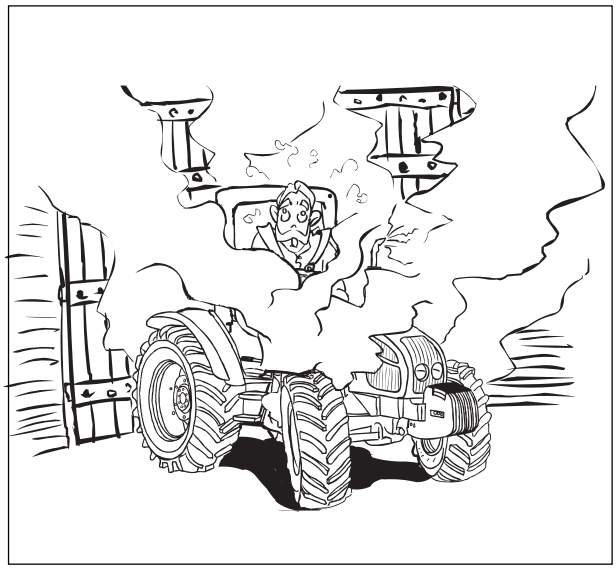


Fig.2-10

DANGER: Start the engine, with the starter key, from the operator's seat only. Never attempt to start the engine by shorting across the starter terminals. The machine will start in gear if the neutral start circuit is bypassed. This could cause serious injury or death to anyone near the tractor (Fig. 2-11).

Fig.2-11

Follow recommended starting procedures

Follow the starting procedures recommended in the Operation section of this Operator Instruction Book. This includes normal starting, cold starting, and the use of starting fluids.

Test the controls.

After starting, re-check all gauges and lights. Make sure everything is functioning correctly. If the tractor does not respond correctly when each control is operated, DO NOT use the machine until the fault is rectified.

Ensure that the starter solenoid cover is always in position.

Starting fluid

WARNING: It is very important that you read the label on the can before using starting fluid. DO NOT use aerosol cans of starting aid on tractors with the thermostart connected to the electrical system. Ether combined with thermostart can cause an explosion with damage to engine, personal injury or both.

Handle starting fluid correctly. Starting fluid must only be used when an ether-start aid is fitted as original equipment by the manufacturer or when installed by a Dealer as an accessory. In case of tractors being fitted with glow plugs or thermostart, these must be removed prior to the installation (Fig. 2-12).

If aerosol cans of starting fluid are to be used the thermostart must be disconnected. Remove the wire from the thermostart unit which will be found on the induction manifold. Tape the end of the wire to prevent an electrical short circuit.

Before starting the tractor, ensure that no persons or hindrances are present in its range (Fig. 2-13).

Fig.2-12

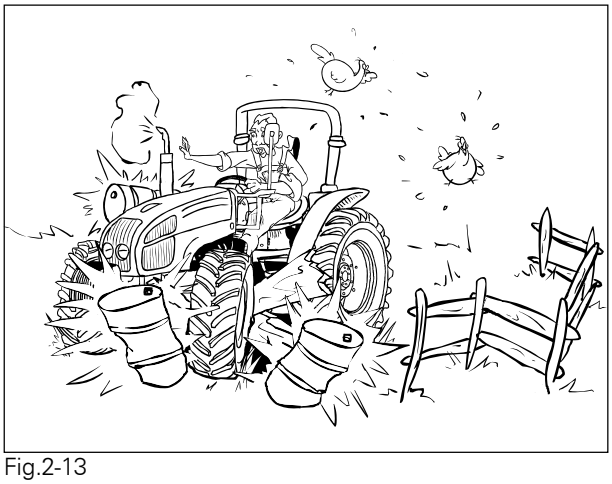


Fig.2-13

SAFETY - WORK SAFELY

WARNING: An unbalanced tractor could overturn and cause injury or death. Make sure front frame counterweights, wheel weights and wheel ballast are used as recommended by the manufacturer. NEVER add extra counterweights to compensate for an overload, better to reduce the load.

WARNING: Keep all parts of your body inside the operator's compartment while operating the tractor.

Make the right moves

Make sure your tractor is ready for the job it must do. Know the rated load capacities of your tractor and never exceed them. Be certain that any equipment or implements you intend to use DO NOT exceed the load rating of your tractor. Be sure the tractor and implement PTO rev/min match.

Keep in mind that tractors normally operate on uneven, unpaved, and often bumpy or sloping surfaces. Operating conditions can reduce the amount of weight you should carry or pull.

Follow safe operating practices

- Operate the controls smoothly - don't jerk the steering wheel or other controls.
- DO NOT get on or off a moving tractor. Keep a firm grip on the steering wheel at all times, with the thumbs clear of the spokes when driving the tractor.
- Make sure you have adequate clearance in all directions for tractor, cab, safety frame and implement.
- NEVER play games with a tractor or equipment.
- NEVER attempt to work the controls except from the operator's seat.
- Before getting off the tractor, always disengage the PTO, lower all attachments and implements to the ground, place the tractor in neutral, engage parking brake, shut off the engine and remove the key.

DO NOT touch, lean on, or reach through any implement mechanism or permit others to do so.

Stay alert. Should something break, come loose, or fail to operate in your equipment, stop work, shut off the engine, inspect the machine and have repairs or adjustments made before resuming operation.

Do not start the tractor without ensuring a perfect command of speed and steering controls (Fig.2-14).

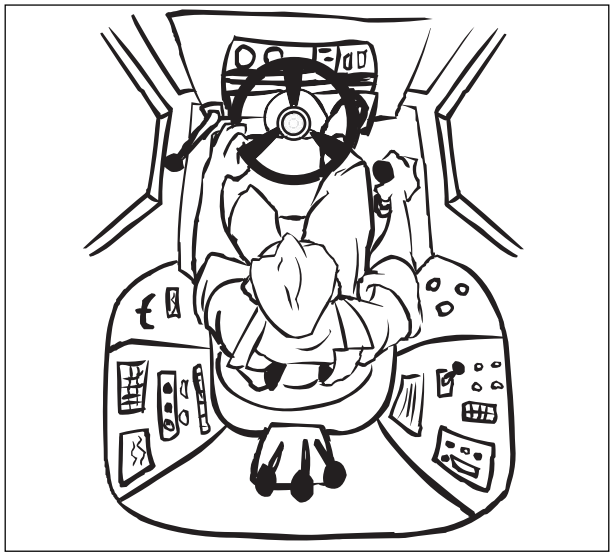


Fig.2-14

- Before starting, inspect the work area to establish the best and safest procedure. Plan your work so that you drive as straight as possible forward. Beware of trenches, pits, ditches, slopes, trunks or stumps, ponds etc. Watch for any possibly dangerous condition. If you are using a front loader or foldable implements or implements with high components, watch out for obstacle in the tractor's way.

***WARNING:** Accidental contact with high-voltage lines causes death. In case of contact with high-voltage conductors DO NOT leave the tractor, but move the tractor and/or the loader in such a way as to eliminate the contact and reach a safe distance (Fig.2-15).*

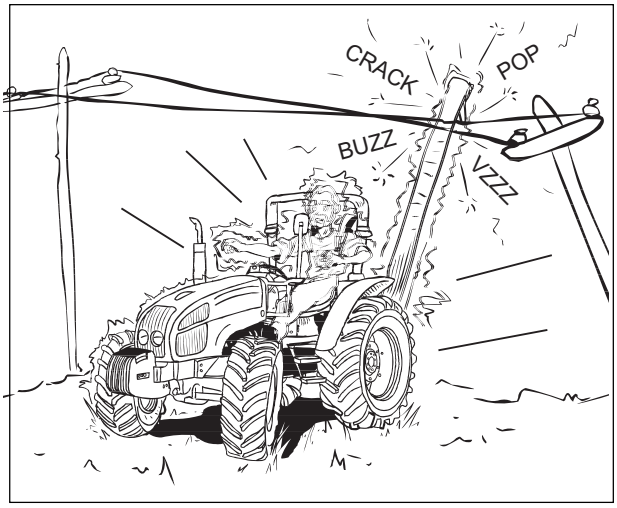


Fig.2-15

Watch out for others

- Be aware of what is going on. Never allow an untrained or unqualified person to operate your tractor. They could injure themselves or someone else.

WARNING: Your tractor is a one-person machine. DO NOT permit others to ride on the tractor or the implement (Fig. 2-16). In some countries a passenger seat must be fitted to carry passengers. Never allow anyone to ride on the implements or other equipment including trailers, except on certain harvesting equipment, specifically designed for riders during the actual harvest operation only (not during transport). Such equipment must have provision for a safe riding area. NEVER allow children on a tractor.

WARNING: Be certain you can control both speed and direction before moving. Move slowly until you are sure that everything is operating properly. After starting, recheck the steering, right and left. Be certain you have full steering and brake control. If differential is locked, DO NOT operate at high speed or turn the tractor until the differential lock is disengaged.

WARNING: NEVER lift a load over anyone (Fig. .2-17).

- Keep others away from your operation. Never allow anyone to stand or pass under a raised implement (Fig. 2-17).
- DO NOT lift objects that cannot be contained safely in the bucket, get the appropriate attachment. Never allow anyone to stand on the safety frame or fenders.
- When using a loader, avoid sudden stops, starts, turns, or change of direction. Keep loads as near to the ground as possible.
- Never stand (or allow anyone else to stand) in front of, under, or behind loaded or loading equipment. Never drive a tractor up to someone standing in front of a fixed object.
- Keep others away from articulation joints, hitches, drawbar, lift arms, PTO drives, cylinders, belts, pulleys, and other moving parts. Keep all shields and guards in place.

WARNING: NEVER stand, or allow anyone else to stand between the tractor and implement unless the engine is turned off and the parking brake is engaged, the transmission is in neutral, and all attachments or implements are lowered to the ground.

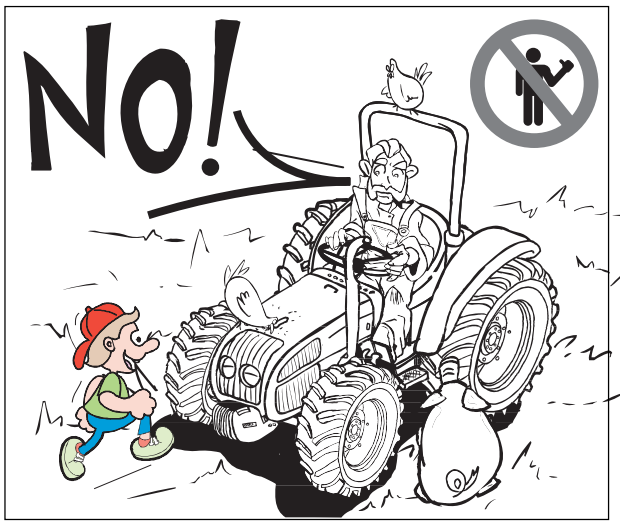


Fig.2-16

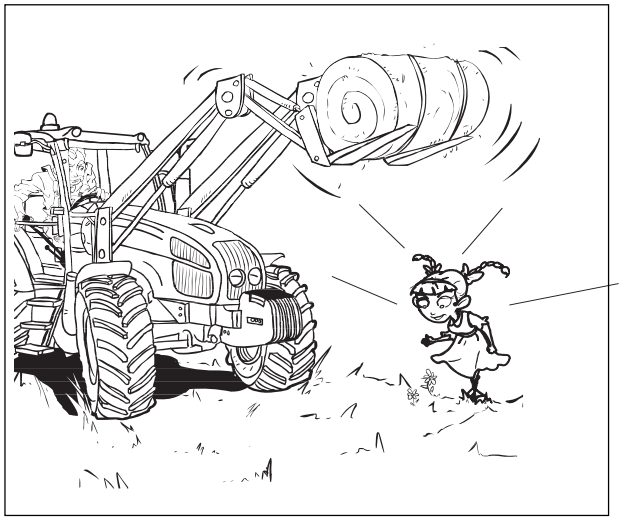


Fig.2-17

Risk of overturning

For your safety, it is recommended that all platform tractors are fitted with safety frame and seat belts (Fig. 2-18).

In the event of overturning with a tractor fitted with a cab or safety frame, hold the steering wheel firmly and DO NOT attempt to leave the seat until the tractor has come to rest. If the doors of the cab are obstructed, leave through the rear window or the roof hatch. (Fig. 2-18).

To avoid side overturns

- Set the wheel track at the widest setting suitable for the job being done.
- Lock the brake pedals together before driving at transport speeds.
- Reduce speed to match operating conditions. If the tractor is equipped with a front-end loader, carry the bucket and load as low as possible.
- Make wide slow turns at reduced speed. DON'T let your tractor bounce. You may loose steering control.
- DON'T pull a load too heavy for your tractor. It could run away on the down slope or the tractor could jackknife around a towed load.
- DON'T brake suddenly. Apply brakes smoothly and gradually.
- When going down a slope use the throttle to slow the tractor engine and use the same gear you would use to up the slope. Shift into gear before you start downhill.
- Engage four-wheel drive (if fitted), this will give four-wheel braking.

WARNING: NEVER disengage the clutch or attempt to shift gear after you have started downhill.

- It is always preferable to travel straight up or down a steep slope rather than across it.

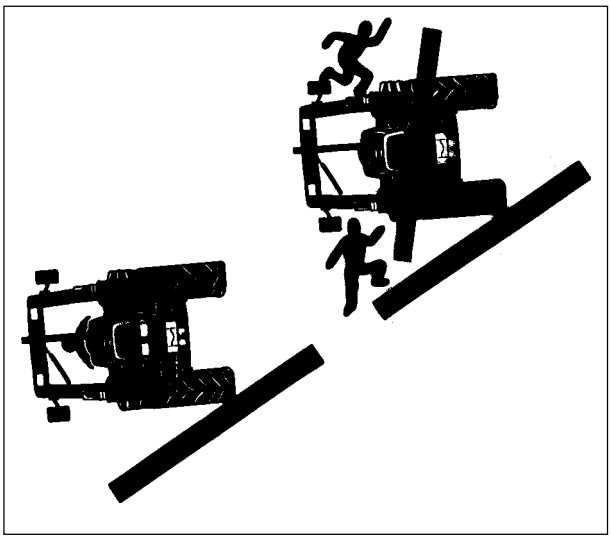


Fig.2-18

Fig.2-19

Fig.2-20

- When operating near ditches or banks, always keep your tractor behind the shear line (A, Fig.2-22). Avoid ditches, embankments and river banks which might cave in (Fig.2-21).

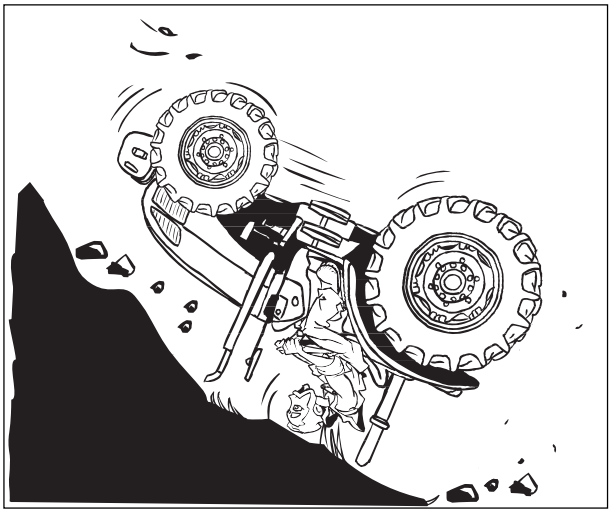


Fig.2-21

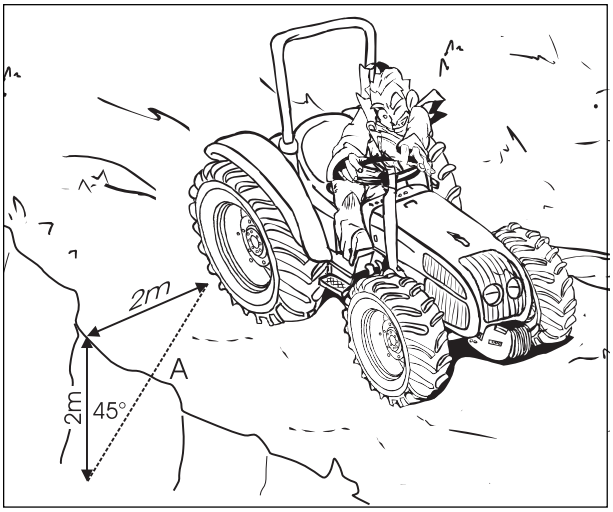


Fig.2-22

- If it is necessary to cross a steep slope, avoid turning uphill, slow down and make a wide turn. Travel directly up or down the slope, never across it. When travelling up or down a slope, keep the heavy end of the tractor pointed uphill. (Fig.2-23).
- When travelling across a slope with side mounted implements, keep the implement on the uphill side. Don't raise the implements. Keep them as low to the ground as possible when crossing a slope.
- Avoid crossing steep slopes if possible. If you must do so, avoid any holes or depressions on the downhill side. Avoid any stumps, rocks, bumps or raised areas on the uphill side (Fig.2-25).

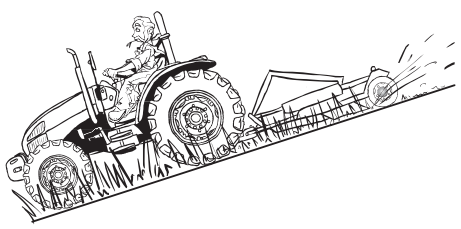


Fig. 2-23

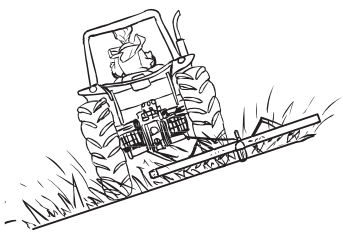


Fig. 2-24

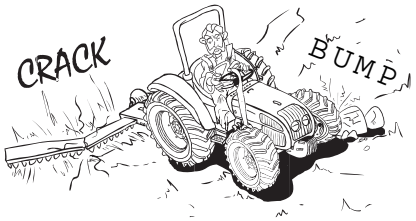


Fig. 2-25

To avoid rear overturns

WARNING: Hitching to the rear axle, or any other point above the swinging drawbar, can cause a rear overturn.

- DO NOT pull anything using the top link connection, or from any point above the centre line of the rear axle. Always use an approved drawbar, and only use a drawbar pin that locks into place.
- High hitching can cause rear overturn, which may cause serious injury or death. Hitch loads to the drawbar only.
- When using a three-point linkage drawbar, the stays must be fitted and kept in the down position.
- Use front counterweights to increase tractor stability when towing a heavy load or to counter balance a heavy rear mounted implement (Fig.2-26).
- DO NOT overload your tractor and DO NOT ballast it beyond its carrying capacity. Never add ballast weight to conterbalance an overload. Reduce the load instead (Fig.2-27).

WARNING: An overload is ALWAYS dangerous. Check the loading capacity of your tractor and NEVER overload (Fig.2-28).

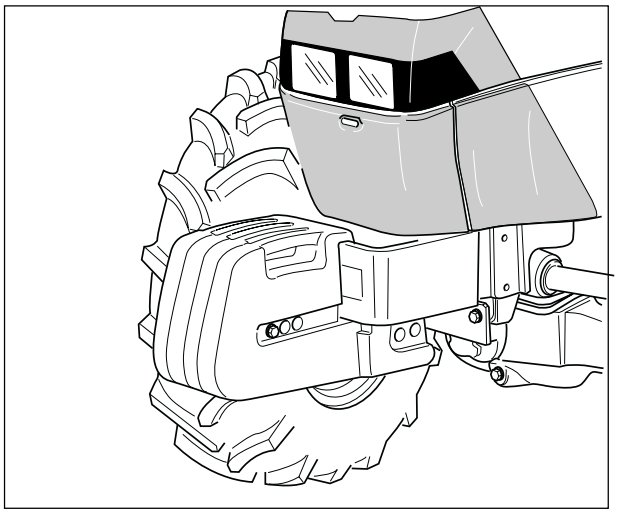


Fig. 2-26

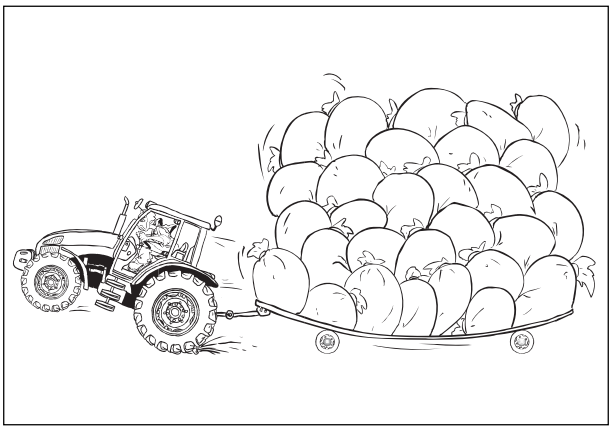


Fig. 2-27

Fig.2-28

- Start forward slowly and gradually increase your speed. DO NOT rev the engine or drop the clutch. If the tractor is attached to a heavy load, or immovable object, improper clutching may cause overturn (Fig. 2-30 and 2-31).
- If the front end of the tractor starts to lift, reduce your speed and, if necessary, disengage the clutch (Fig. 2-29).
- If your tractor is bogged down in mud or frozen to the ground, DO NOT attempt to drive forwards. The tractor can rotate around its rear wheels and overturn (Fig. 2-29). Lift any attached implement and attempt to BACK OUT. If this is not possible, tow it out with another vehicle.
- If you get stuck in a ditch, BACK OUT, if possible. If you must go forward, do it slowly and carefully.
- A bare tractor or a tractor with rear mounted attachments should be backed up the slope in reverse and travel forward downhill.
- A tractor with a loaded front-end bucket should be backed down the slope and travel forward uphill. Keep the loader bucket as low as possible.
- Always keep the tractor in gear when going downhill. Never permit the tractor to coast with clutch disengaged or transmission in neutral.

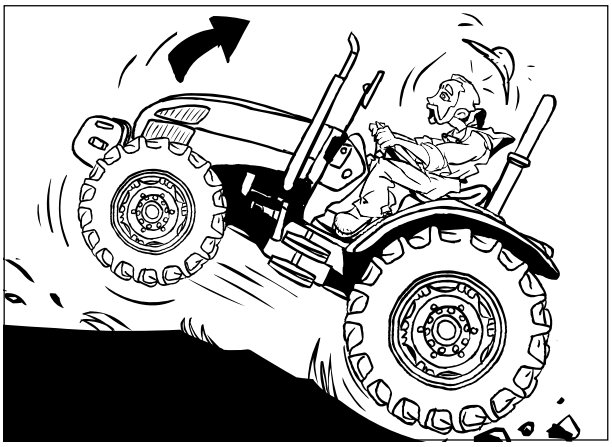


Fig.2-29

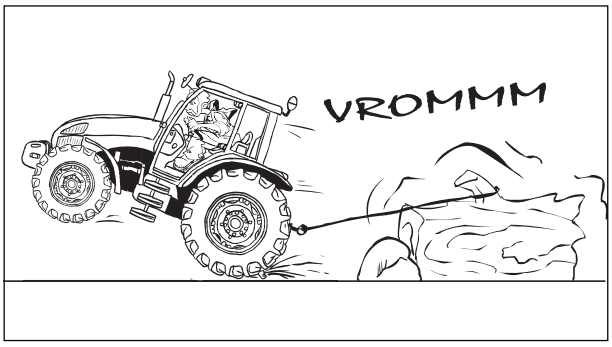


Fig.2-30

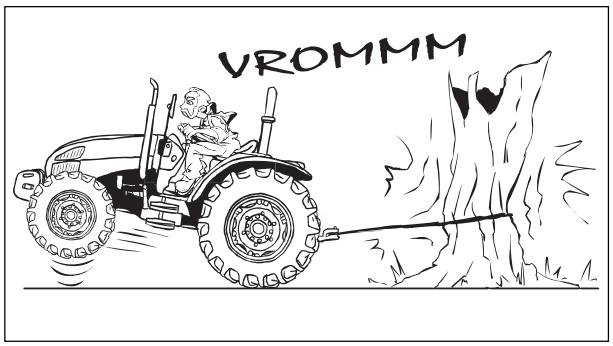


Fig.2-31

General operating hazards

- Ensure that the PTO shield (1) is in place and that the cap (2) is fitted when the PTO driveline is not in use (Fig. 2-32).
- Before attaching, detaching, cleaning or adjusting PTO driven implements, disengage the PTO, stop the engine, remove the key, and make sure that the PTO driveline has stopped.
- Ensure that all the PTO driveline guards are in place and observe all safety signs (Fig. 2-33).
- Be sure everyone is clear of your machine before engaging the PTO. For stationary PTO operation, always place transmission in neutral, engage parking brake and chock both tractor and implement wheels.
- When operating mobile PTO driven equipment, never leave the tractor seat until the PTO drive is disengaged, the transmission is in neutral, the parking brake is engaged, the engine shut off and the key removed.
- DO NOT use PTO adaptors, reducers or extensions as they extend the PTO coupler and universal joint out beyond the protection offered by the PTO shield.
- The top link and lift rods must not be extended beyond the point where threads begin to show.

WARNING: NEVER attempt to unplug the hydraulic connections, or adjust an implement with the engine running or the PTO drive in operation. To do so may result in serious injury or death (Fig. 2-34).

- When using chemicals, carefully follow the chemical manufacturer's instructions for use, storage and disposal. Also follow the chemical application equipment manufacturer's instructions.
- When operating under poor visibility conditions, or in the dark, use your tractor field lights and reduce your ground speed. (**DO NOT** use your field lights when travelling on a roadway because rear pointed white lights are illegal except when reversing and may confuse following drivers).
- Operate your tractor with the wheels set at the widest setting possible, consistent with the particular task you are performing. To adjust wheel settings refer to Maintenance and Adjustment section.
- Reduce your speed when operating over rough or slippery ground and when foliage restricts your view of hazards.
- **DO NOT** make sharp turns at high speed.

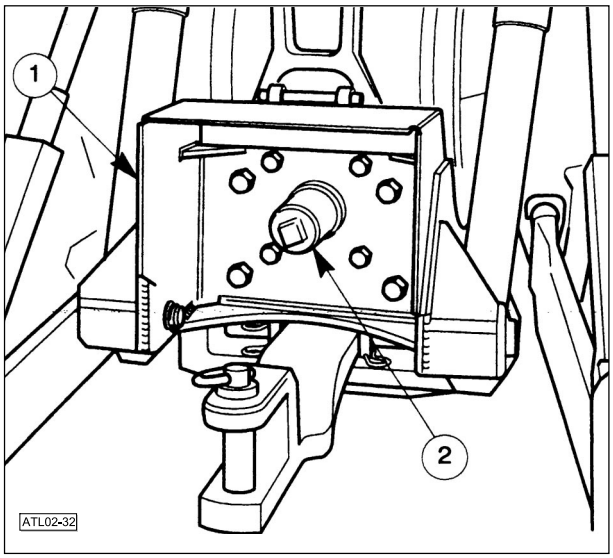


Fig.2-32

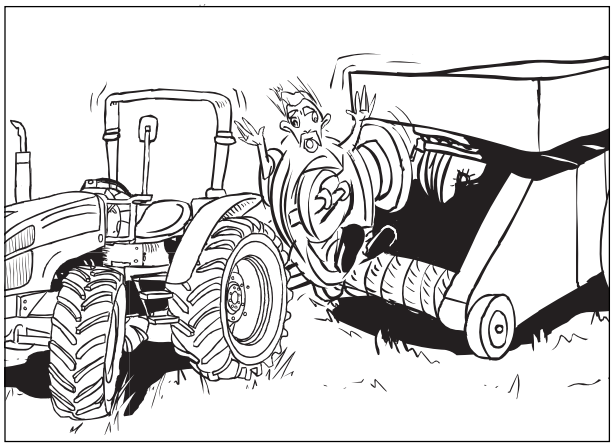


Fig.2-33

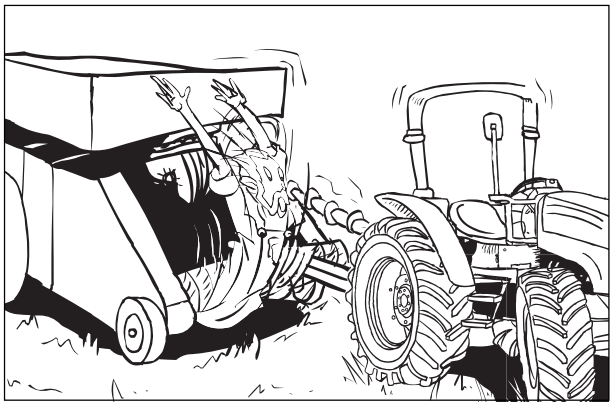


Fig.2-34

Implements and attachments.

WARNING: A front-end loader (bucket or forks) must be equipped with a suitable restraining device to prevent the load, bales, fence posts, rolls of fence, wire etc.) from rolling down the lift arms into the operator's compartment and crushing the driver when the loader is raised. Inadequately secured objects could also fall and injure bystanders. Do not use implements for different purposes or to handle materials they are not expected to (Fig. 2-37). For the operation of front loaders and relative safety rules, please refer to the Operation Manual of the loader.

- Three-point hitch and side mounted implements make a much larger arc when turning than towed equipment. Make certain to maintain sufficient clearance for safe turning.
- When using attachments or implements with the tractor, be sure to thoroughly read the Operator Instruction Book for that attachment or implement and follow its safety instructions.
- Pull only from the approved drawbar. Towing or attaching to other locations may cause the tractor to overturn (Fig. 2-36).
- Improper use of the drawbar, even if correctly positioned, may cause the tractor to overturn to the back.
- DO NOT overload an attachment or towed equipment. Use proper counterweights to maintain tractor stability. Hitch loads to the drawbar only.
- A safety chain will help control drawn equipment should it be accidentally separated from the drawbar while transporting. Using the proper adaptor parts, attach the chain to the tractor drawbar support or other specified anchor location. Provide only enough slack in the chain to permit turning. See your Dealer for a chain with a strength rating equal to, or greater than the gross weight of the towed machine (Fig.2-35).

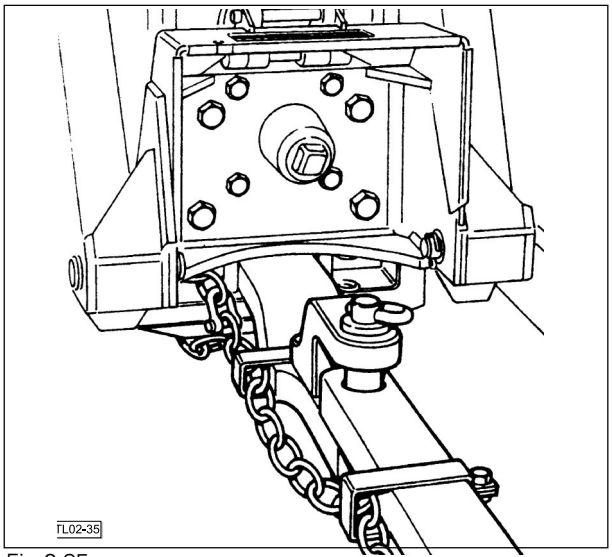


Fig.2-35

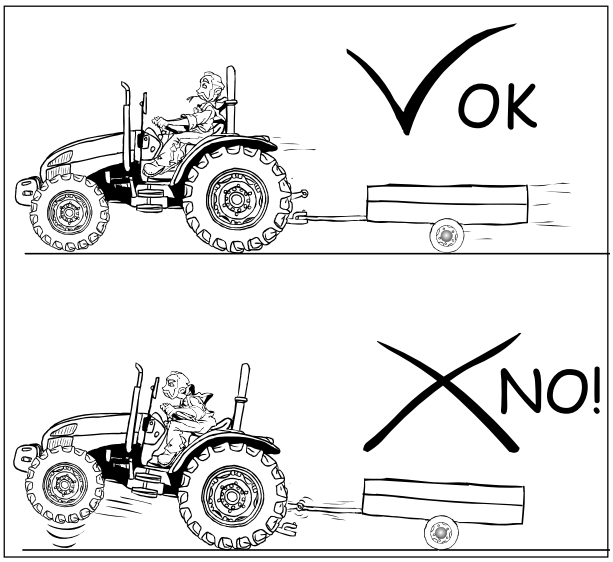


Fig. 2-36

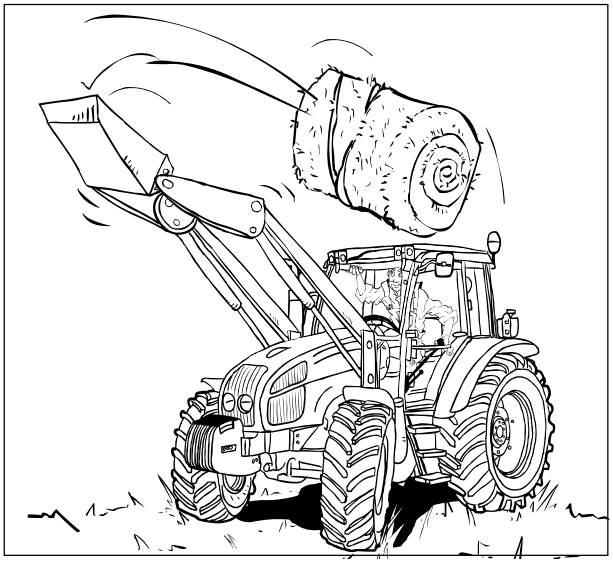


Fig.2-37

Road transport

Before operating your tractor on a public road, a number of precautions must be taken.

- Familiarise yourself - and comply - with all local by-laws, and national laws appropriate to your tractor.
- Lock your brake pedals together.
- Raise all implements to their transport position and lock them in place.
- Place all implements into their narrowest transport configuration.
- Disengage the PTO and differential lock.
- Make sure tractor and equipment are equipped with slow moving vehicle (SMV) signs or beacon if the law requires them (Fig. 2-38 and 2-39) and that loads do not obscure them or other lights.
- Make sure any required clearance flags or hazard lights are in place and in working order.
- Make sure you use a proper hitch pin with a clip retainer.
- Clean off all reflectors and road lights, front and rear, and be certain they are in working order.
- Implements mounted on the 3-point hitch and mounted implements projecting from the side need a wider turn radius than trailed implements. Always be sure to keep enough clearance when making a turn.

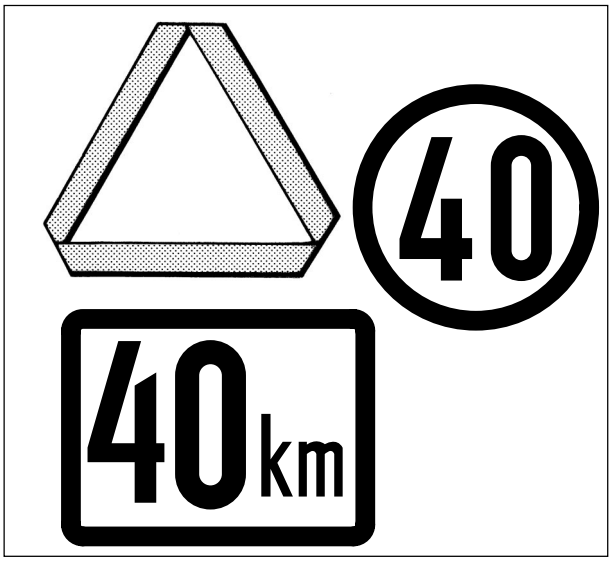


Fig. 2-38 Use the symbol valid in your country.

Road regulations

When operating your tractor on a public road a number of precautions must be taken.

WARNING: DO NOT allow any passengers on the tractor or towed equipment.

- Know the route you are going to travel.
- Use flashing lights or beacon when travelling on roads, day or night, unless prohibited by law (Fig. 2-39).
- Use caution when towing a load at transport speeds especially if the towed equipment is NOT equipped with brakes.
- Observe all local or national regulations regarding the road speed of your tractor.
- Use extreme caution when transporting on snow-covered or slippery roads.
- Wait for traffic to clear before entering a public road.
- Beware of blind intersections. Slow down until you have a clear view.
- DO NOT attempt to pass at any intersection.
- Slow down for turns and curves.

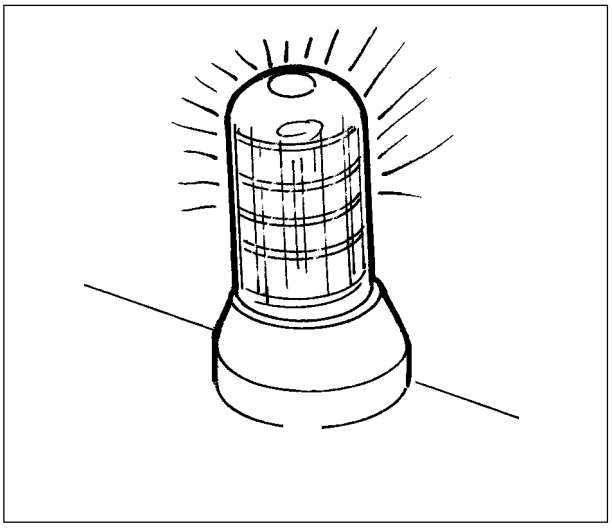


Fig.2-39

- Make wide, gentle turns.
- Signal your intent to slow, stop or turn.
- Shift to a lower gear before going up or down hills.
- Keep tractor in gear. Never coast with the clutch disengaged or transmission in neutral.
- STAY OUT of the path of oncoming traffic.
- Drive in your correct lane keeping as near to the kerb as possible.
- If traffic builds up behind you, pull off the road and let it go by.
- Drive defensively. Anticipate what other drivers might do.
- When towing a load, start braking sooner than normal and slow down gradually.
- Watch out for overhead obstructions.

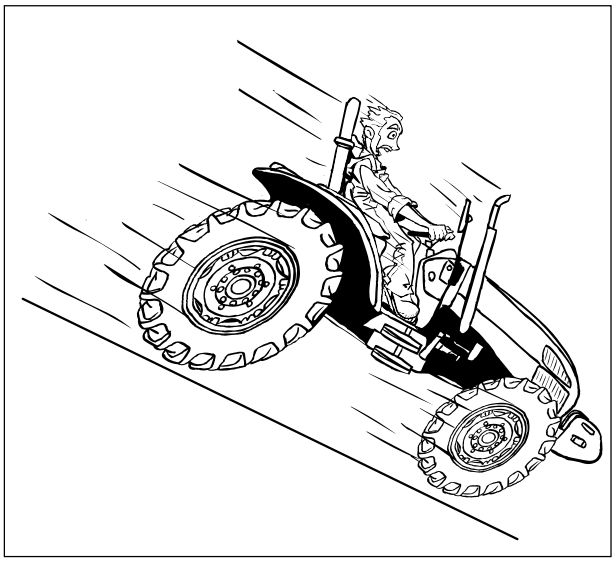


Fig.2-40

SAFETY - AFTER OPERATION

When stopping at any time, bring the tractor to a secure halt (DO NOT park on a slope), apply the parking brake, engage the Park-Lock (if installed), disengage the PTO, place all gear shift levers in neutral, lower the implement to the ground, stop the engine and remove the key BEFORE leaving the seat (Fig.2-41).

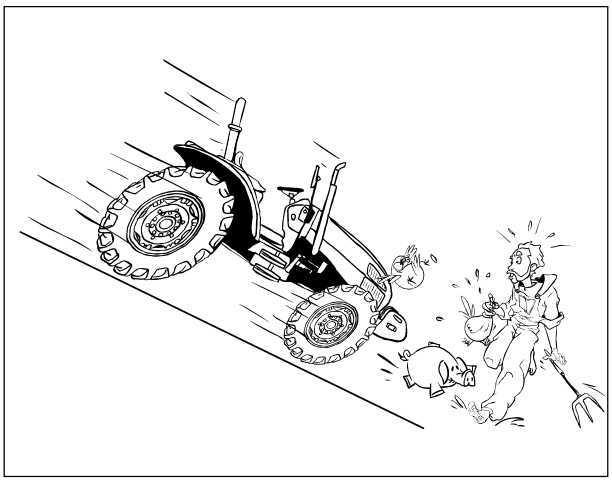


Fig.2-41

Additional notes

The following notes are designed to complete the Operation and Maintenance Manual to ensure that your tractor always works safely, reliably and efficiently.

Tractors are mainly designed for towing implements that are held by a drawbar or three-point linkage or for driving implements using the PTO.

To obtain the greatest possible towing force, particularly when using a tractor with dual rear wheels, you should observe the following rules concerning axle loads and wheel slip.

If an extra implement is attached, the extra loads must conform to the specifications given in the Manual or by your dealer.

1. Front axle payload: 4WD tractors.

   The front axle normally bears 40% of the tractor weight on the road without implements; it may thus be necessary to add an extra weight on the front end to ensure that the front axle has traction.

   If an implement is mounted on the front end of the tractor, check the weight of the fully loaded implement by placing the front axle on a scale: the maximum axle load must be less than the capacity of the front axle.

   Check the maximum payload capacity of the front axle (maximum weight allowed on it) in your Operation and Maintenance Manual).

2. Rear axle payload.

   The maximum permissible payload for the rear axle depends on whether or not the tractor is carrying a weight or towing a load.

   When the tractor is only carrying a load, without towing, the wheels must have sufficient capacity that is ensured if the tyres are of the exact size and have the specified number of plies.

   In certain conditions, extra weight may be applied to the rear axle but it is not normally necessary unless the ground offers very little grip.

   When fully loaded, the weight of the tractor must be less than the maximum permissible ballasted weight since the tractor cannot be loaded right up to the maximum static payload for each of the axles, front and rear, at the same time.

3. Ballast and wheel slip.

   Wheel slip must be measured for the tractor to operate efficiently during tillage.

   On normal terrain in good operating conditions, wheel slip should be between 4 and 10%.

   On loose soil, wheel slip can exceed 12%.

   If wheel slip is found to be greater than this amount, proceed with care as operating conditions might quickly become unstable.

   In certain conditions, it might be better to add ballast in order to reduce wheel slip, but this increases the workload of the transmission and thus reduces the working life of the tractor.

   Your dealer will be able to help you ascertain the maximum ballast weight that you can use in your normal working conditions.

   Using dual wheels or wider tyres, the tractor will have greater grip but the workload on the transmission will also be greater in dry and difficult soil conditions.

   Dual wheels or wider tyres can sometimes be mounted for use on slippery or sandy terrain but the axle weight on hard, dry surfaces must be limited as the greater grip provided by wider tyres can damage the transmission.

   The only torque limiter in transmission is wheel slip.

4. Front axle lead when four-wheel drive is engaged.

   In a 4WD tractor, the ground speed of the front wheels must be slightly greater than that of the rear wheels, in order to ensure traction.

   The front wheel advance must be between 1% and 4%.

   Greater percentages may be used only on very soft ground.

   The tyres supplied with your tractor have been checked for the correct advance of the front wheels, but when you change them, make sure you use tyres of the same make and size in order to maintain the same speed ratio between front and rear wheels.

   If tyres of different makes are used, their size and internal pressure may modify this ground speed ratio, or advance. This could increase the load on the front axle and lead to unacceptable operating conditions, excessive tyre wear and, in extreme conditions, damage to the front axle or to the transmission.

   Changes in the weight of the tractor, in the pressure or size of the tyres can cause the tyres themselves to bounce. This is not only annoying for the driver in the cab, but it can also cause a loss of grip and excessive wear in the transmission unit.

5. Economy PTO.
As shown in the Operation and Maintenance Manual, the economy PTO on large tractors is a feature that makes it possible to use the PTO at standard speed using lower engine RPM rates.

This feature can only be used when the implements powered by the PTO are to be used only for light operations, such as for sprinklers or rakes, which require less than 30 H.P.

The economy PTO does not need to use the maximum power of the engine but it is designed to save fuel.

When using the Economy PTO, make sure that the implement input shaft RPM NEVER exceeds the recommended RPM for the implement, e.g. max. 610 RPM for a 6 spline shaft, and max. 1170 RPM for a 21 spline shaft.

6. Working on slopes.
The Operation and Maintenance Manual provides information on using the tractor on slopes in a safe manner.

It is also important to note that, when working on very steep slopes, the lubrication conditions in the transmission may be reduced. This is caused by the oil flowing towards the front or rear part of the transmission unit.

Special measures and extra lubrication may be required when using the tractor under extreme conditions.

Your dealer will be able to assist you if you expect to work on slopes of over 15°.

7. Remote hydraulic controls.
The hydraulic system of the tractor may be used in some particular applications to operate the hydraulic motors.

When using these applications, note that the hydraulic motors can generate considerable heat and the oil cooling system of the tractor may not be sufficient when these high-power hydraulic motors are used.

Some remote applications have an extra cooling system. However, every time they are used, make sure that the oil is cooled and filtered sufficiently in order to avoid damage to the tractor's hydraulic system.

8. Towing heavy loads (trailers, etc.)
When towing heavy loads at high speed, it may be necessary to have a supplementary braking system (e.g. trailer brakes) and greater ballast on the rear wheels in order to ensure sufficient braking power on the rear axle.

Check with your dealer possible additional requirements for special spplications

9. Operating a dry-disc clutch.
Most tractors with a manual gearshift are equipped with a dry-disc clutch for changing gear.

Since the clutch slips every time the gear is changed, it can cause a certain amount of wear and thus create heat. To ensure long life for the clutch, it is thus advisable to reduce the load of the tractor and reduce engine speed when starting up the tractor from a standing position.

Prolonged slipping at high engine speed with large loads will cause the clutch disc to heat up, thereby reducing its working life.

10. Further instructions for the operator.
The Operation and Maintenance Manual provides instructions to ensure that the tractor is always used in a safe manner.

If your tractor is also driven by other people, make sure that they are fully aware of these accident prevention instructions.

Passengers may only be carried on the tractor if they are sitting on a special passenger seat and have their seat belt fastened.

It is forbidden to carry anyone on the outer structure of the tractor in any circumstances.

This is because the safety frame is only designed to protect persons inside the cab or the safety frame.

If the tractor is equipped with a safety frame alone, it is unadvisable to transport passengers even using a special passenger seat.

11. Chemical filters for the cab.
Use of a filter with chemical absorbent in air-conditioned cabs can increase the degree of protection in certain applications but you must always read and understand the label on the chemical product to be used.

WARNING: PERSONAL PROTECTION EQUIPMENT MAY BE NECESSARY WHEN USING CHEMICAL SUBSTANCES.

Follow the instructions on the labels of the chemical substances and on the filters to be used.

12. Battery.
Decal on battery cover

WARNING

Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm.
Wash hands after handling.

Risks deriving from exposure to noise

Noise characteristics and measurement

Noise is a pressure variation in an elastic medium, generally the air, produced by the vibration of a material body (source) that determines an undesired and often annoying acoustic sensation. Noise is mainly characterized by:

- **sound intensity or level:** expresses the entity of the pressure variation due to the sound wave. Measured in decibels (dB), it doubles the sound intensity and, thus, the energy that reaches the ear.
- **frequency:** expresses the number of pressure variations of the wave per second and is measured in Herz (Hz) - acute noises have high frequencies (2000-4000 Hz or more) while low-pitched noises have low frequencies (250 Hz or less).

How the risk is evaluated

The higher the sound level and exposure time, the greater the noise risk will be.

Two parameters are used:

- **LAeq** (Equivalent continuous weighted level A): this is a sound level measurement that takes into account noise fluctuations and the varying sensitivity of the ear to the frequencies: LAeq is measured with a sound-level meter;
- **PEL** (Personal Exposure Level): this is a measurement that takes the various noise levels into account along with the time the worker remains on the individual machines or working at determined processes: PEL is calculated mathematically.

Noise pathologies

Damage to the hearing

Noise causes hypacusia or deafness because it destroys the acoustic receptors, nervous cells able to transform the mechanical sound vibrations into nervous impulses that, on reaching the brain, determine the aural sensation.

These receptors are irreplaceable if they are destroyed and the resulting damage is irreversible: hypacusia worsens if exposure to noise continues and does not improve even if this terminates.

Moreover, it is also bilateral since it can be accompanied by annoying buzzing and whistling sounds, and by intolerance to loud noise.

The damage is insidious since it proceeds slowly and unexpectedly: in the initial phase, when it is limited to a diminished ability to perceive acute sounds (music, bells) or the spoken voice when there is a background noise, it can only be detected by means of an audiometric test.

Pulsating noises of great intensity lasting a very short time are highly damaging since the ear is unable to actuate any physiological protective measures in time.

Hypacusia from noise generally arises after several years of exposure and depends on the PEL (risk almost null below 80 dBA) and on individual characteristics. It is an incurable disease: the only efficacious means of protection against it is prevention.

Other effects

Noise does not just determine aural sensation. For levels exceeding* 70 dBA, it causes stress by means of the cerebral integration centers and determines a specific neurovegetative reaction responsible for effects that lead to cardiocirculatory and gastroenteric diseases.

Amongst these, it is worthwhile noting: an increase in gastric acidity, a decrease in the heart rate, visual range and reflex speed; a sensation of discomfort and weariness with an increased sense of fatigue.

These effects are dangerous because they also increase the risk of accidents.

Personal equipment to protect against noise

Individual protective equipment attenuates the sound energy transmitted to the ear through the air.

This equipment is used when dangerous exposure cannot be avoided in any other way.

There are different types of devices with different attenuating capacities: helmets, ear muffs, ear plugs (Fig. 2-42).

Helmets and ear muffs offer the greatest protection but they are bulky and inconvenient to wear. They are therefore only of use for exposure to high noise levels but for short periods of time (max. 2 hours).

Ear plugs are generally tolerated to a greater extent and are of particular use in the case of lengthy exposure to noise of a lesser intensity.

Always use adequate individual protective equipment to safeguard the hearing when the personal daily level of exposure to noise is 85 dBA or more.

Consult the "Specifications" chapter of this manual in relation to tractor noise measured in instantaneous conditions in compliance with the laws in force.

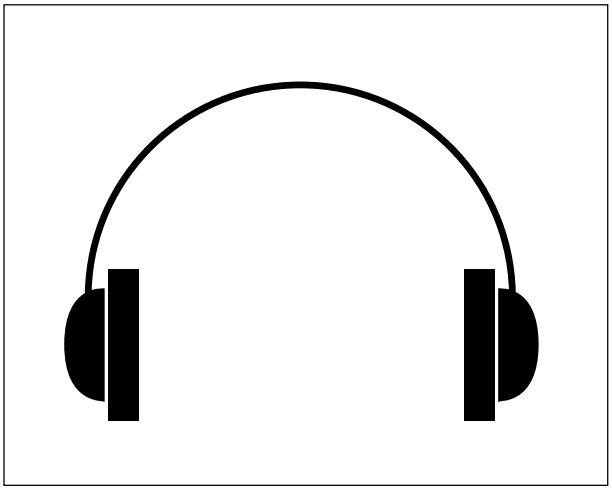


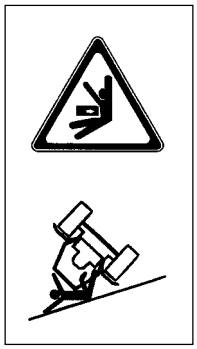
Fig.2-42

POSITION OF SAFETY NOTES ON TRACTOR - WEO Markets

3559 557 M1

Inside the cab, on upper lining or on left-hand fender for tractors with safety frame.

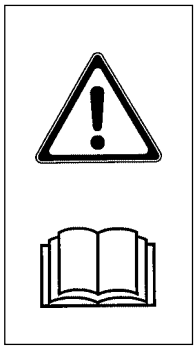
***DANGER:** Risk of overturning and crushing the chest. If the tractor is tipping over, hold tightly on to the steering wheel. DO NOT leave your seat or jump off the tractor.*



3559 558 M1

Inside the cab, on upper lining or on left-hand fender for tractors with safety frame.

***WARNING:** Caution. Read the safety and operating instructions in the Operation and Maintenance Manual.*



3648 447 M1

Tractors with safety belts. Placed on the post in the cab, or on left-hand fender for tractors with safety frame.

***WARNING:** Danger of being crushed. When safety belts are worn, the safety frame must always be in the upright position.*

3647 158 M1

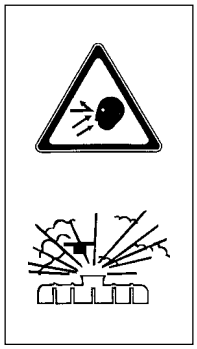
Inside the hood side door near the battery support.

***WARNING:** Risk of electrocution. Always disconnect the negative lead before the positive lead when removing the battery or servicing the electrical system.*

3559 554 M1

Placed on the expansion vessel of engine cooling circuit.

***DANGER:** Hot steam or water jets. Protect your face. Radiator under pressure when engine is hot. Remove cap with caution only when engine is cold.*



3664 275 M1

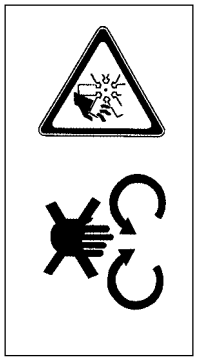
On both sides of the radiator or on intake manifold.

***WARNING:** Hot surfaces. Risk of burns to hands and fingers. Warning. Keep well clear of hot components, keep at a safe distance. Keep guards in place when the engine is running.*

3559 556 M1

On the right-hand and left-hand sides of radiator or on shroud.

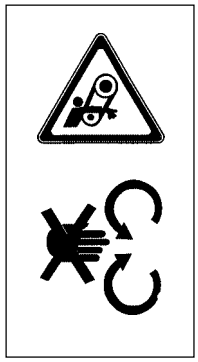
***WARNING:** Danger of entanglement. Keep hands well clear of fan blades when engine is running. Keep guards and screens in place.*



3559 559 M1

On both sides of the radiator or on intake manifold.

***WARNING:** Danger of entanglement. Keep hands well clear of moving parts and be careful not to get caught up in belts or pulleys when engine is on. Keep guards in place.*



3647 032 M1

On rear lining inside the cab for tractors without passenger seat, on left-hand fender for platform tractors.

***WARNING:** Risk of being crushed. DO NOT allow any passenger to sit on the fenders or on any other part of the tractor or towed implements.*

3559 553 M1

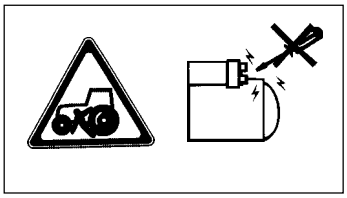
Inside the rear fender.

***DANGER:** Risk of entanglement. Keep clear of rotating shafts. Be careful NOT to get caught up by the cardan shaft of the PTO drive-line. Keep all guards in place on the transmission shafts on the tractor and implements.*

3648 152 M1

On the starter motor

***DANGER:** Risk of being crushed. DO NOT short across starter terminals to start the engine. This operation could put your life at risk. Start engine only from driving seat.*



3647 463 M1

On the rear left-hand fender, only with electronic power lift.

***DANGER:** Risk of blows and serious accidents. Keep to one side of the tractor when using external lift controls. NEVER STAND between tractor and implement - you could be hit by the implement.*

3559 555 M1

On the starter motor.

WARNING:
Risk of electrocution. Always disconnect the negative terminal of the battery before removing the solenoid cover and before servicing the electrical system.

3647 299 M1

On the rear right-hand fender, only with electronic power lift.

***DANGER:** Risk of blows and serious accidents. Keep to one side of the tractor when using external lift controls. NEVER STAND between tractor and implement - you could be hit by the implement.*

3647 033 M1

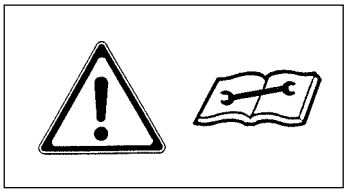
On safety frame for tractors with platform.

***WARNING:** Risk of overturnig and crushing. Always keep the safety frame mounted during work. Never use the tractor without the safety frame.*

3647 157 M1

Near the fluid reservoir of the brake system.

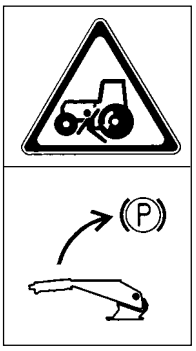
***WARING:** Risk of damage to the brake system. Carefully read the safety warnings and instructions in the Operation and Maintenance Manual before servicing.*



3647643 M1

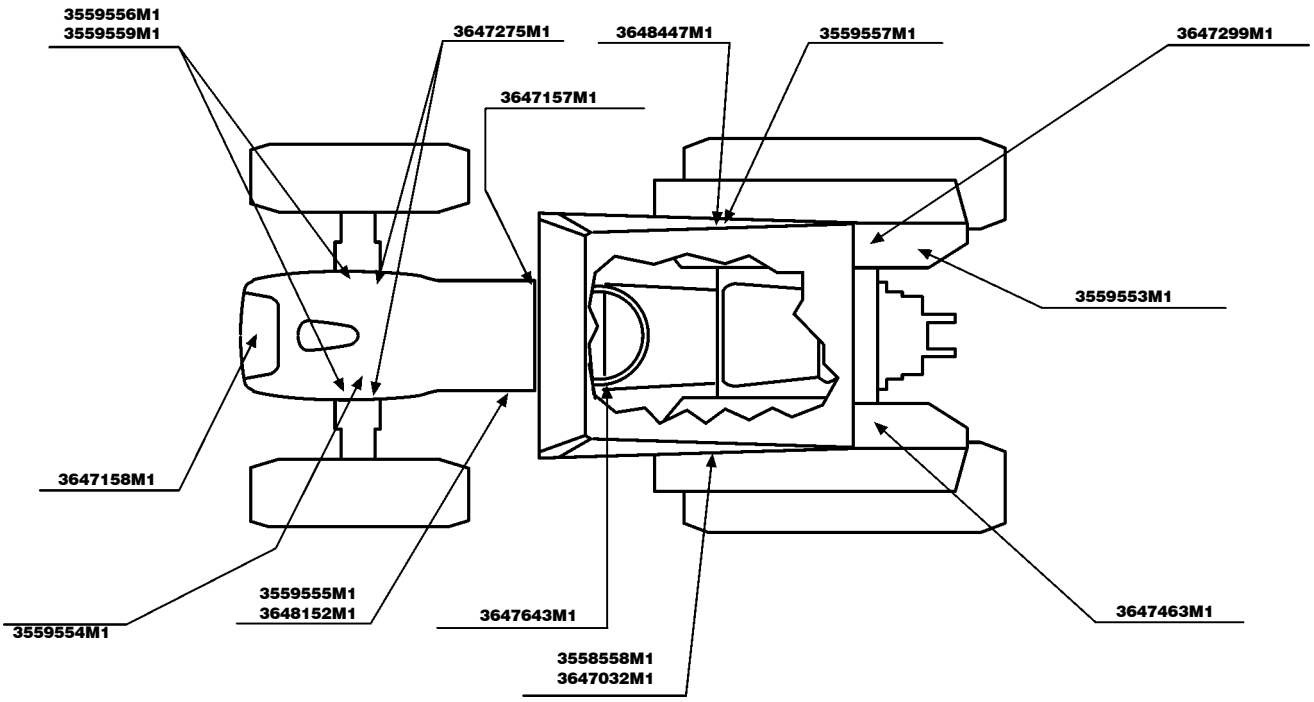
Near the parking brake lever.

***DANGER:** Danger of being crushed. Whenever you stop the tractor, always pull the parking brake lever BEFORE leaving the tractor..*

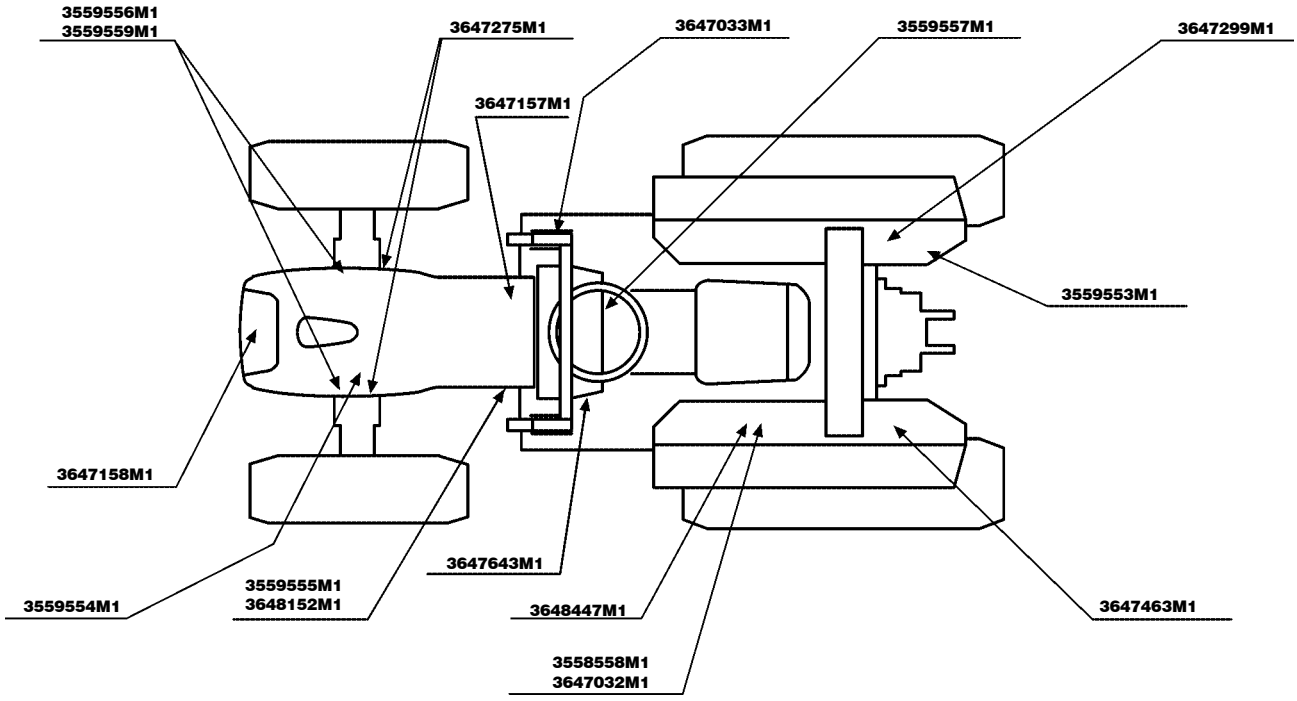


POSITION OF SAFETY NOTES ON TRACTOR - WEO Markets

Decal positions on tractors with cab



Decal positions on tractors with platform and safety frame



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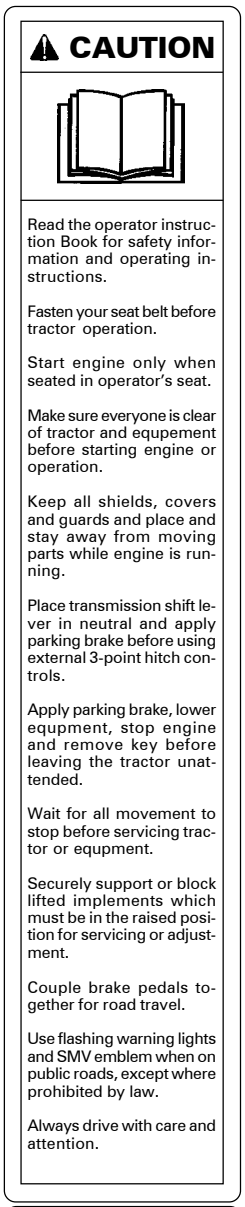
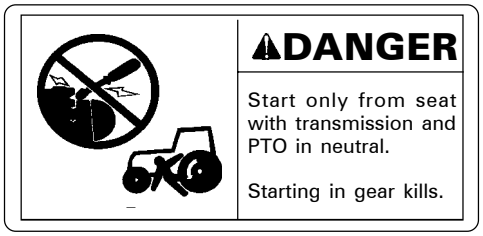
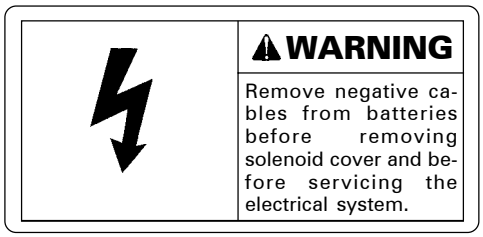
SAFETY DECAL LOCATIONS - NORTH AMERICA


⚠ CAUTION
Read the operator instruction Book for safety information and operating instructions.
Fasten your seat belt before tractor operation.
Start engine only when seated in operator's seat.
Make sure everyone is clear of tractor and equpement before starting engine or operation.
Keep all shields, covers and guards and place and stay away from moving parts while engine is running.
Place transmission shift lever in neutral and apply parking brake before using external 3-point hitch controls.
Apply parking brake, lower equpment, stop engine and remove key before leaving the tractor unattended.
Wait for all movement to stop before servicing tractor or equpment.
Securely support or block lifted implements which must be in the raised position for servicing or adjustment.
Couple brake pedals together for road travel.
Use flashing warning lights and SMV emblem when on public roads, except where prohibited by law.
Always drive with care and attention.

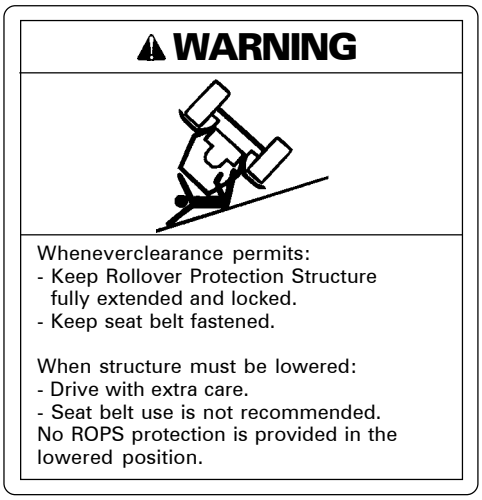
3558703M1
Located inside cab on left - hand pillar or on the left-hand fender for footstep tractors.



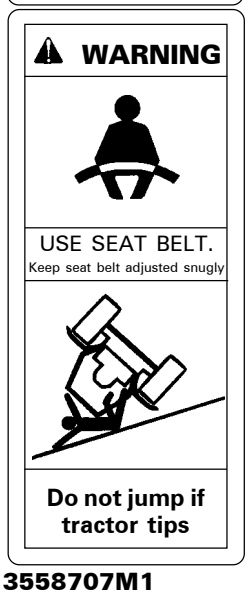
3648153M1
Located on the starter motor.


⚠WARNING
Remove negative cables from batteries before removing solenoid cover and before servicing the electrical system.

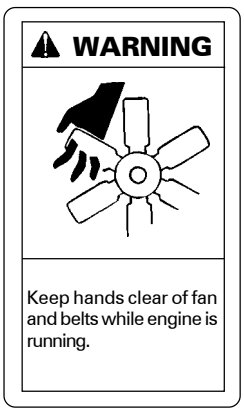
3558705M1
Located on the starter motor.


⚠WARNING
Whenever clearance permits:
- Keep Rollover Protection Structure fully extended and locked.
- Keep seat belt fastened.
When structure must be lowered:
- Drive with extra care.
- Seat belt use is not recommended.
No ROPS protection is provided in the lowered position.

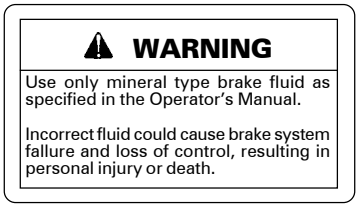
3647053M1
Located on the safety ROPS for footstep tractor.



3558707M1
Located inside cab on right - hand pillar or on the left fender for footstep tractors.

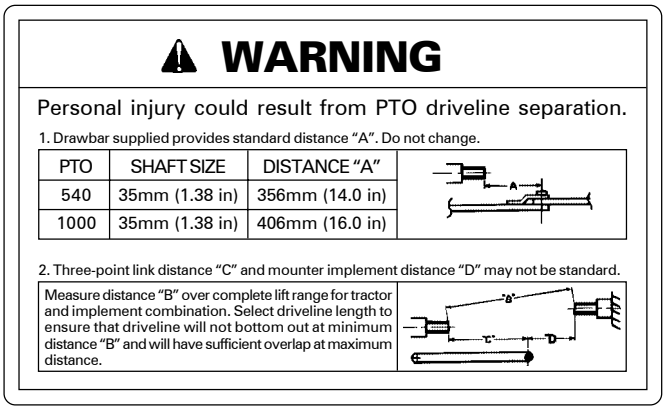


3558712M1
Located on right and left-hand side of radiator.

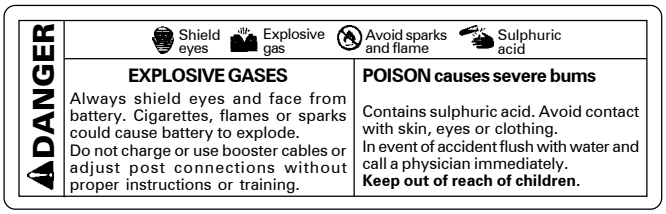

⚠ WARNING
Use only mineral type brake fluid as specified in the Operator's Manual.
Incorrect fluid could cause brake system fallure and loss of control, resulting in personal injury or death.

3647156M1
Located near the brake reservoir bracket on the hood rear bracket or on the dashboard.

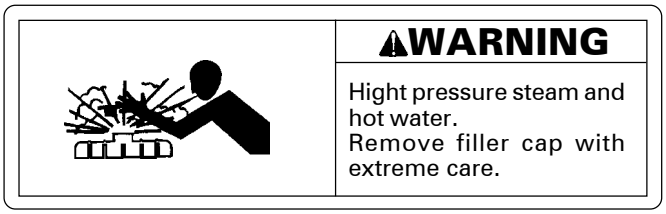
Safety Notes


WARNING
Personal injury could result from PTO driveline separation.
1. Drawbar supplied provides standard distance "A". Do not change.
PTO | SHAFT SIZE | DISTANCE "A"
540 | 35mm (1.38 in) | 356mm (14.0 in)
1000 | 35mm (1.38 in) | 406mm (16.0 in)
2. Three-point link distance "C" and mounter implement distance "D" may not be standard.
Measure distance "B" over complete lift range for tractor and implement combination. Select driveline length to ensure that driveline will not bottom out at minimum distance "B" and will have sufficient overlap at maximum distance.

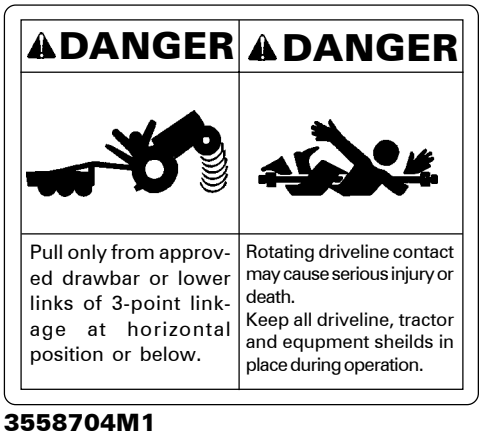
3558709M1
Located at rear of cab on the inner side of the left fender


DANGER
Shield eyes
Explosive gas
Avoid sparks and flame
Sulphuric acid
EXPLOSIVE GASES
Always shield eyes and face from battery. Cigarettes, flames or sparks could cause battery to explode.
Do not charge or use booster cables or adjust post connections without proper instructions or training.
POISON causes severe bums
Contains sulphuric acid. Avoid contact with skin, eyes or clothing.
In event of accident flush with water and call a physician immediately.
Keep out of reach of children.

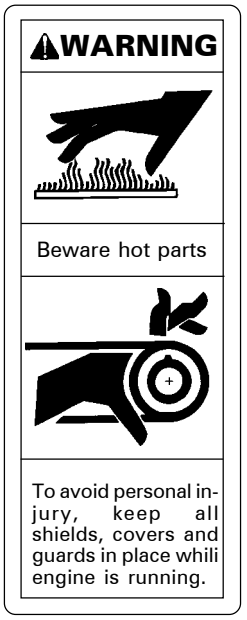
3558711M1
Located inside the battery cover



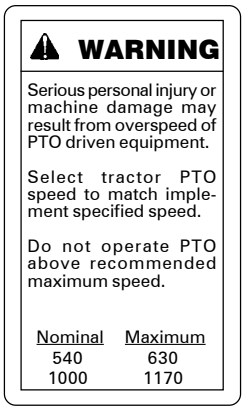
3558708M1
Located over the radiator.


DANGER
DANGER
Pull only from approved drawbar or lower links of 3-point linkage at horizontal position or below.
Rotating driveline contact may cause serious injury or death.
Keep all driveline, tractor and equpment sheilds in place during operation.

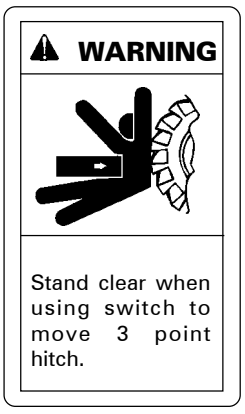
3558704M1
Located at rear of cab on the rear window fender.



3558706M1
Located on right - and lefthand side of radiator, or on the air conveyor.

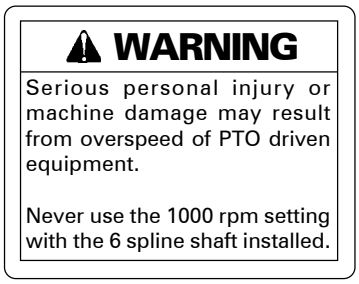

WARNING
Serious personal injury or machine damage may result from overspeed of PTO driven equipment.
Select tractor PTO speed to match implement specified speed.
Do not operate PTO above recommended maximum speed.
Nominal | Maximum
540 | 630
1000 | 1170

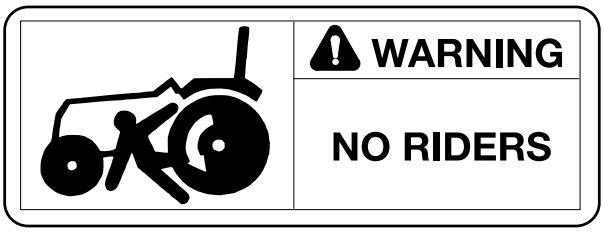
3558710M1
Located inside cab on the left hand pillar or on the rear fender for footstep tractors.



3647155M1
Located at rear of cab or on the rear fenders only with electronic lift.

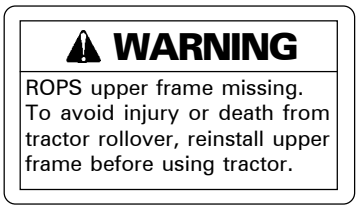
3649794M1
Located on PTO cover.


WARNING
Serious personal injury or machine damage may result from overspeed of PTO driven equipment.
Never use the 1000 rpm setting with the 6 spline shaft installed.

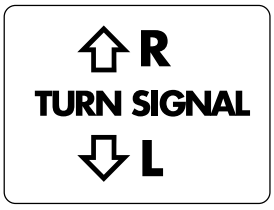


3649711M1
Located on the rear fender

3658327M1
Located on the ROPS (Only on platform tractors)


WARNING
ROPS upper frame missing.
To avoid injury or death from tractor rollover, reinstall upper frame before using tractor.

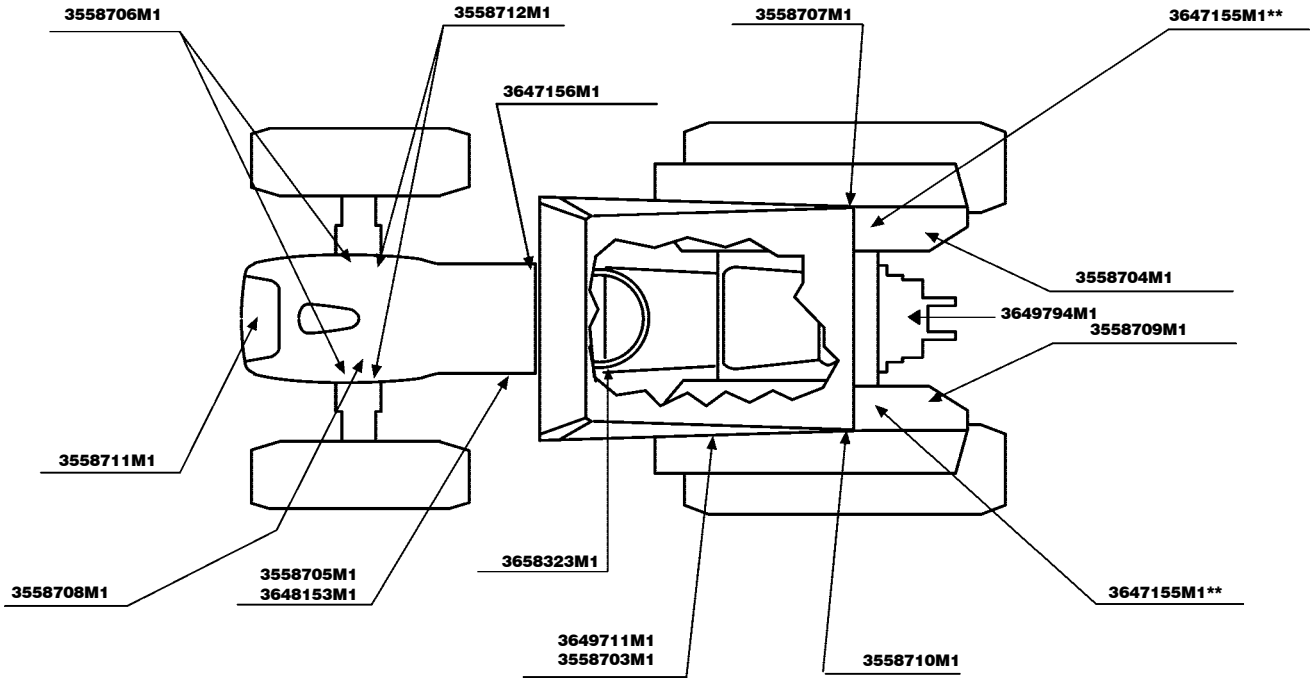
3658323M1
Located rear the turn switch



POSITION OF SAFETY NOTICES ON TRACTOR

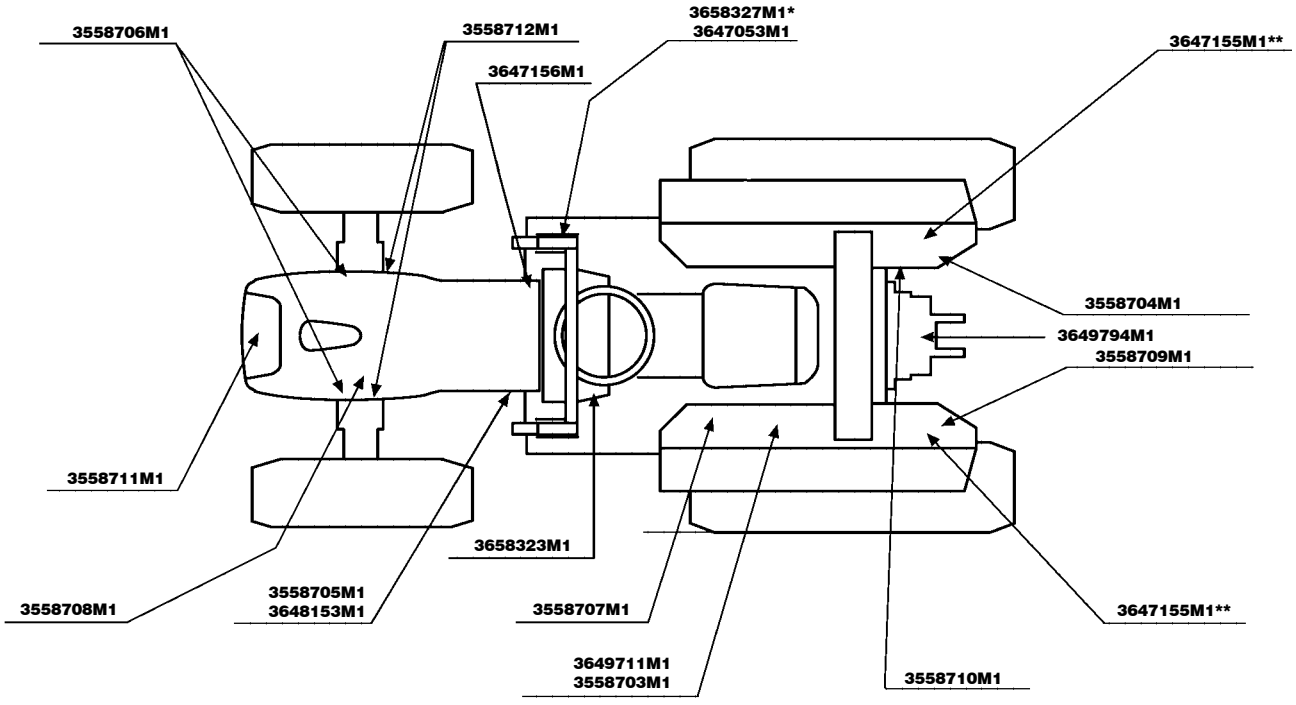
North America markets

LOCATION ON CAB TRACTORS



*Only with safety frame
**Only with electronic lift

LOCATION ON FOOTSTEP TRACTORS



Chapter 3
Instruments and controls

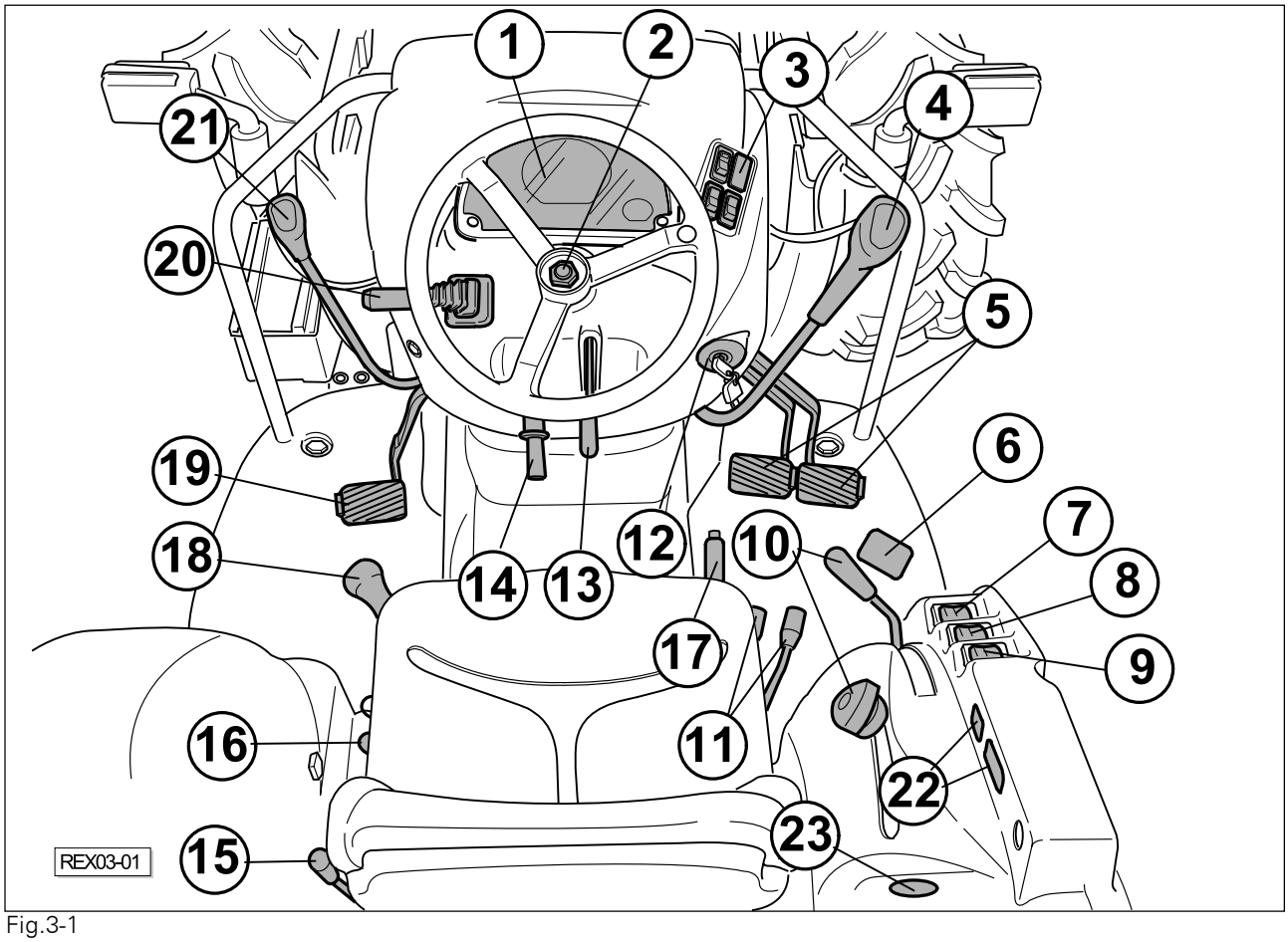


Fig.3-1

Instruments and controls

Version with mechanical reverse shuttle

NOTE: *Consult the 'Operation' chapter for instructions on how to correctly use the controls*.

1. Control and instrument panel
2. Adjustable steering wheel lock
3. Switches
4. Gearshift control lever
5. Brake pedals
6. Accelerator pedal
7. Differential lock engagement button
8. Front drive engagement button
9. Hydraulic selector (on request)
10. Hydraulic power lift control levers
11. Auxiliary control valve levers
12. Ignition switch
13. Accelerator hand lever
    - Forward = idling
    - Back = max. speed
14. Mechanical PTO engagement lever
15. PTO control lever
16. PTO speed selector lever
17. Parking brake engagement lever
18. Speed range selector lever
19. Main clutch disengaging pedal
20. Light and horn switch.
21. Mechanical reverse shuttle control lever
22. Automatic lift/lower buttons (on request)
23. Maximum lift adjustment (on request)

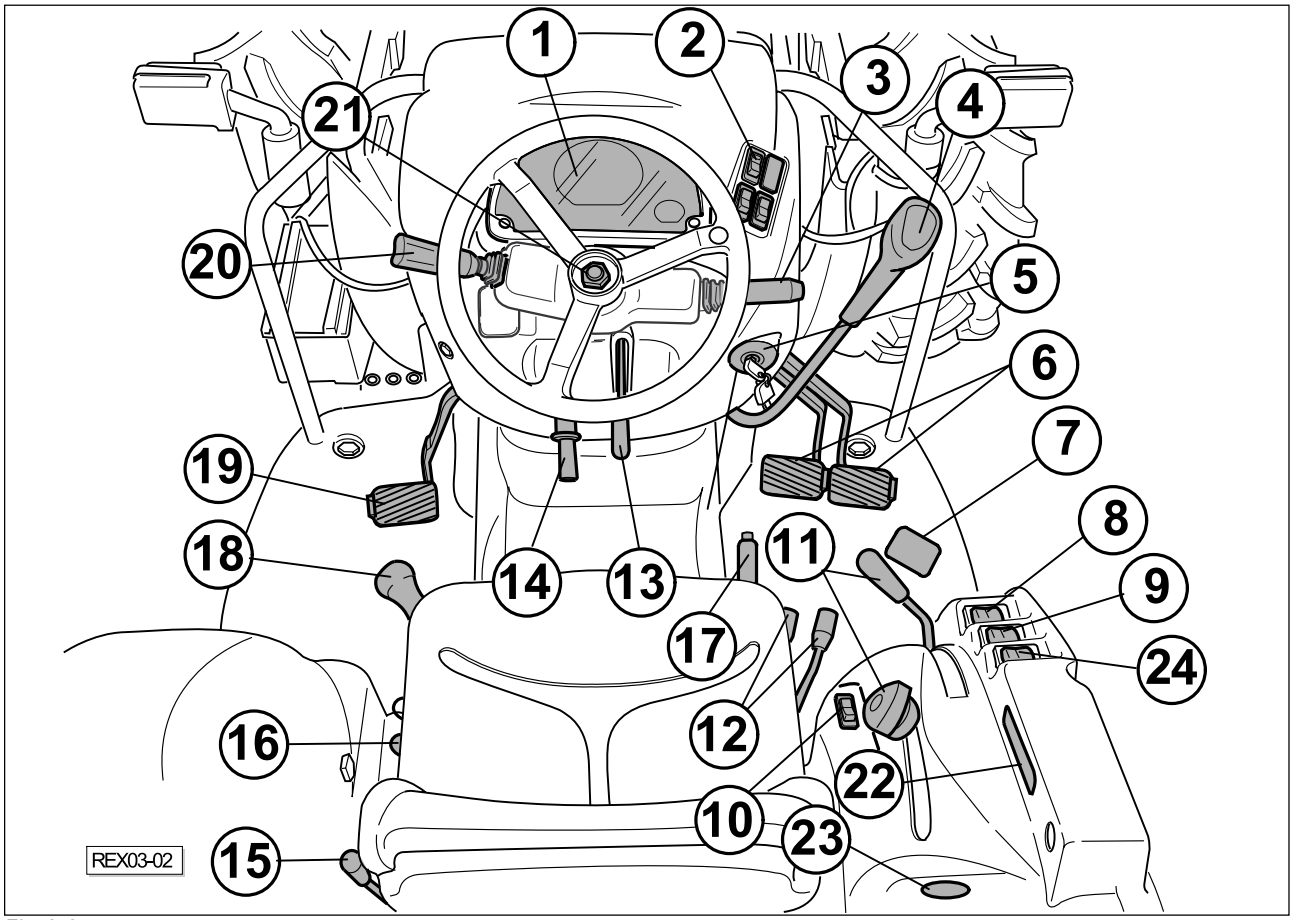


Fig.3-2

Instruments and controls

Version with Powershuttle

NOTE: *Consult the 'Operation' chapter for instructions on how to correctly use the controls.*

1. Control and instrument panel
2. Switches
3. Light and horn switch.
4. Gearshift control lever
5. Ignition switch
6. Brake pedals
7. Accelerator pedal
8. Differential lock engagement button
9. Front drive engagement button
10. Hydraulic PTO clutch engagement/disengagement switch
11. Hydraulic power lift control levers
12. Auxiliary control valve levers
13. Accelerator hand lever
    - Forward = idling
    - Back = max. speed
14. Park-Lock engagement lever
15. PTO speed selector lever
16. PTO control lever
17. Parking brake lever
18. Speed range selector lever
19. Main clutch disengaging pedal
20. Electro-hydraulic reverse shuttle control lever
21. Adjustable steering wheel lock
22. Automatic lift/lower buttons (on request)
23. Maximum lift adjustment (on request)
24. Hydraulic selector (on request)

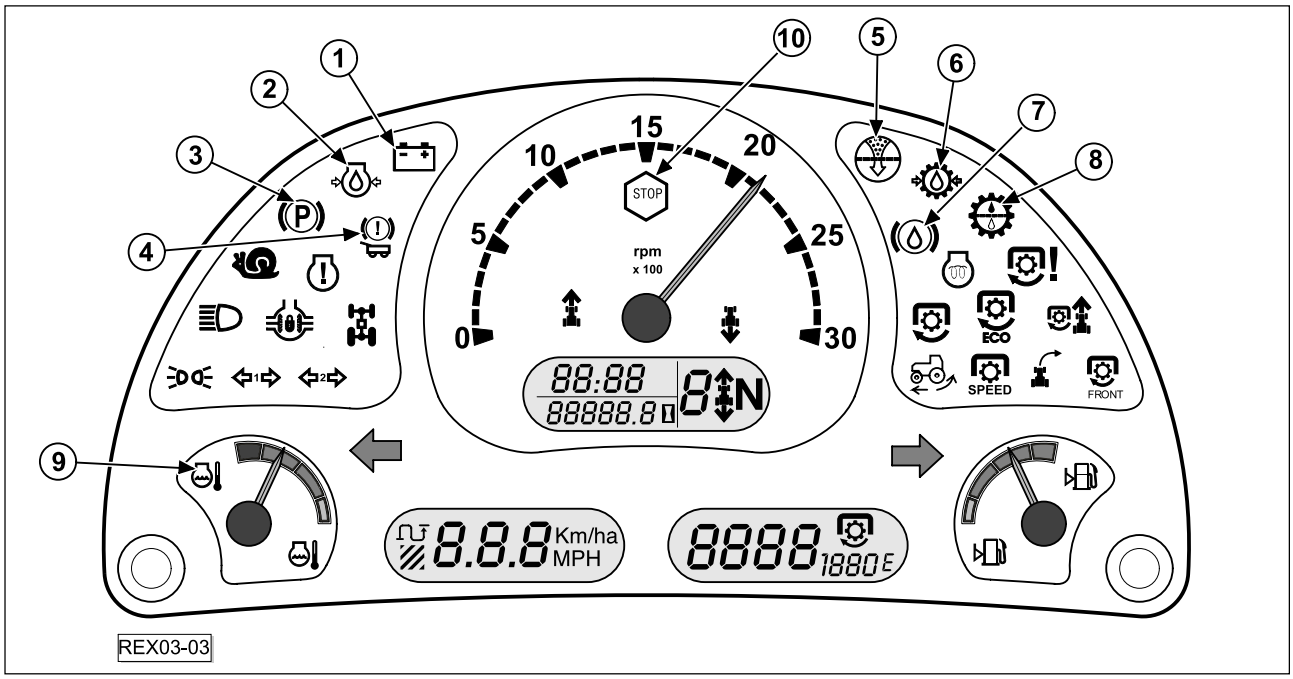


Fig. 3-3 Instrument panel

Instrument panel

Warning lights (Fig.3-3)

1 - *Battery charging warning light.* Should go out as soon as the engine starts.

2 - *Engine oil pressure warning light.* Should go out as soon as the engine starts. It is quite normal for this light to come on if a hot engine is left to idle.

3 - *Red warning light*. It comes on when the parking brake is engaged.

4 - *Warning light for low pressure in hydraulic circuit of trailer brake* (if mounted and depending on the market).

5 - *Dry air filter blockage warning light.* It comes on when the cartridge needs cleaning or replacing.

6 - *Red warning light (steady) for low pressure in hydraulic transmission system.* If it comes on during work, ask your authorized Dealer.

Warning buzzer

The buzzer comes on whenever the red warning light for low pressure in hydraulic transmission system should come on. In this case, ask your Dealer's specialized workshop for help.

7 - *Red warning light (steady) for Powershuttle filter blockage (if applicable)*.

8 - *Red warning light*. Check the oil level in the brake fluid reservoir. Top up with designated fluid.

9 - *Red warning light (steady) for transmission and hydraulic system oil filter blockage.*

10- *Red warning light for too hot engine coolant.* (See engine coolant temperature indicator)

11-*Red warning light of immediate engine "STOP".* It comes on together with engine oil pressure warning light (2), tractor (7) and trailer (4) brake circuit oil pressure warning lights, hydraulic system low pressure warning light (6).

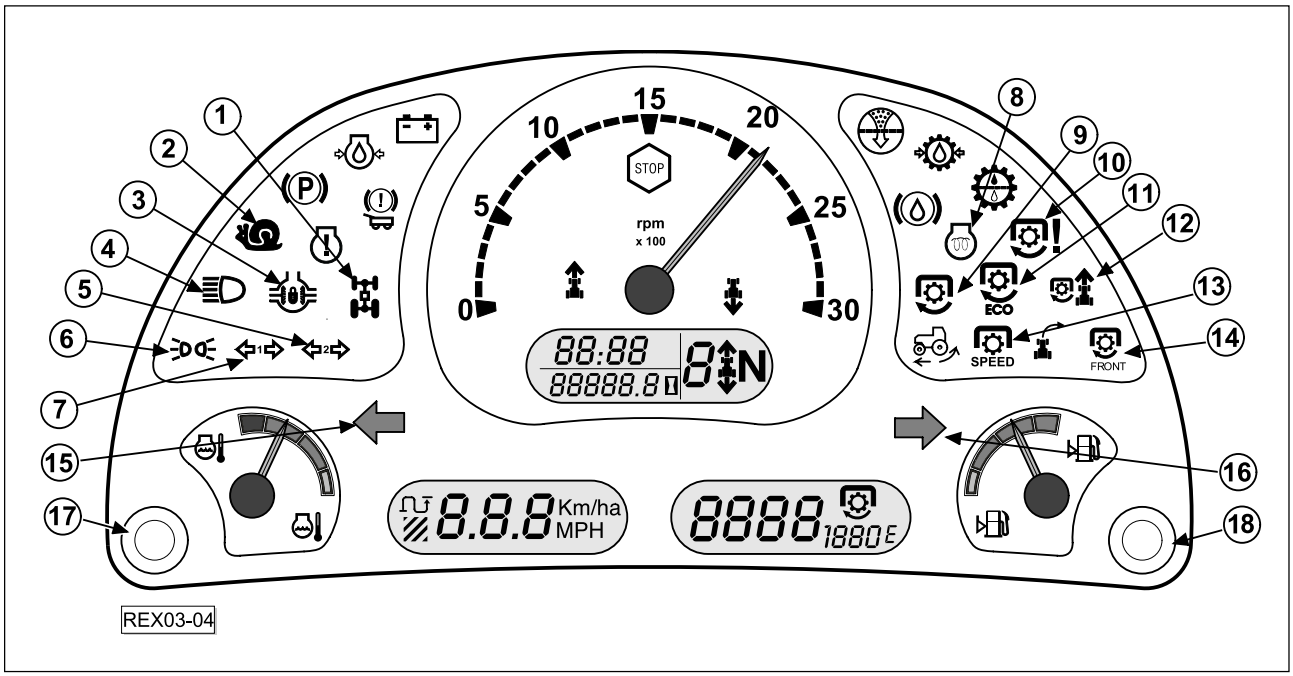


Fig. 3-4 Instrument panel

Instrument panel

Operation indicator lights (Fig.3-4)

1 - *4WD engagement indicator – orange* (if mounted).

2 - *4WD engagement indicator – orange* (if mounted).

3 - *Diff lock indicator - orange.*

4 - *Main beam indicator – blue.*

5 - *Direction indicator light for 2nd trailer – green.*

6 - *Side light indicator – green*.

7 - *Direction indicator light for 1st trailer – green*.

8 - *Glow plugs pre-heating indicator (if mounted) - orange*.

9 - *Rear independent PTO engaged indicator – orange.*

10 - *Overspeed power take-off (only NAO markets)*.

11- *Indicator of 540ECO RPM PTO engaged – orange*.

12 - *Synchronized PTO engaged indicator – orange*.

13- *PTO speed selector lever engaged indicator - orange*.

14 - *Front PTO engaged indicator (if mounted) - orange*.

15 - *Left turn indicator light.*

16 - *Right turn indicator light*.

17-18 *Buttons for adjustments.*

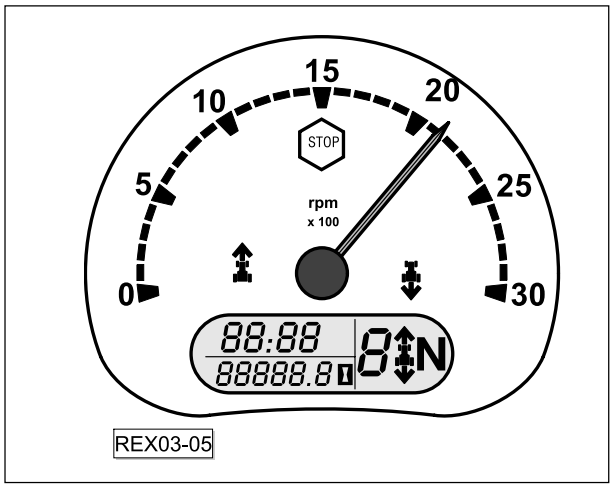


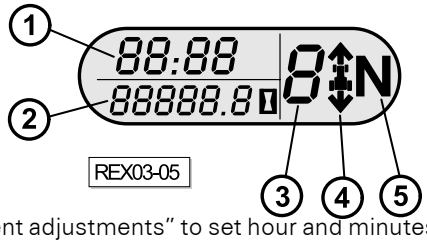
Fig.3-5

RPM meter

The engine rate is displayed by a pointer on the outer graduated scale. The pointer should never reach the 2450 RPM zone which shows excessive engine speed

Clock and hour counter

Fig. 3-6



Clock (1)
See "Instrument adjustments" to set hour and minutes.

Hour meter (2)
The *hour meter* (2) in the lower part of the instrument shows the time actually worked, independent of the engine speed rate.

- Hours are shown by 5 white digits.
- 1/10ths of an hour are shown by a yellow digit.

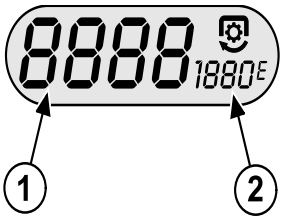
LCD - Powershuttle only
3 - Powerfive range indicator
1= Reduced range - Underdrive
2= Direct range

4 - Drive direction indicator
↑- Forward gear indicator
↓- Reverse gear indicator

5 - Powershuttle indicator
N = Powershuttle in neutral
F = Forward - Forward gears
R = Reverse - Reverse gears
P = Parklock engaged

Power take-off speed indicator - Digital panel

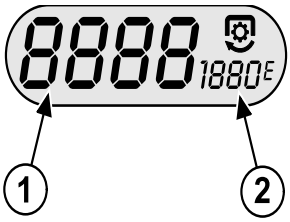
Fig. 3-7



The indicator (1) displays the operating rate of the PTO with great accuracy. The operating rate of implements for which the rotation speed must be precisely selected can therefore be kept under constant control.
Speed indicator of the PTO engaged (2):
540 RPM; 540 ECO RPM; 1000 RPM

Speedometer - Digital panel

Fig. 3-8



The speedometer displays the ground speed of the tractor without considering wheel slip.The speed can be expressed in kph or mph, depending on the country in which the tractor is to be used.
NOTE: *if the originally fitted tyres must be changed for special jobs, the speedometer can be re-programmed to suit the size of the new ones.*

Engine coolant temperature gauge

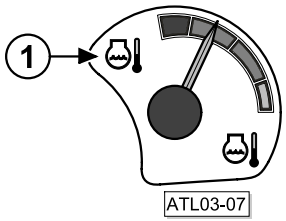


Fig. 3-9

- Blue area = ambient temperature. Wait for the pointer to reach the green area, indicating the normal operating temperature.
- Green area = normal operating temperature.
- Red area = temperature too high.

The overheating warning light (1) comes on at 105-110°C (221-230°C). Possible causes of overheating:

a. Low engine coolant level.
b. Radiator caked with mud, dust, straw, etc.
c. Build-up of deposits in coolant circuit.
d. Loose fan belt.
e. Faulty thermostat.

***CAUTION:** If the engine temperature is too high, let the engine idle immediately but do not switch it off. If the temperature gauge stays in the red, identify the cause immediately and seek expert advice if necessary.*

Fuel level gauge instrument

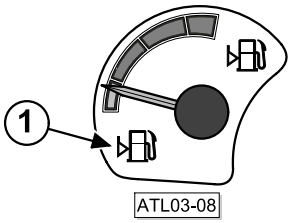


Fig.3-10

When the pointer moves into the yellow zone and the red reserve warning light (1) comes on, there are still about 10 liters of fuel in the tank.

Dashboard regulations

LCD1, LCD2, LCD3 indicate the 3 digital displays, while **P1 and P2** are the left-hand and right-hand selection buttons, respectively (Fig.3-11).

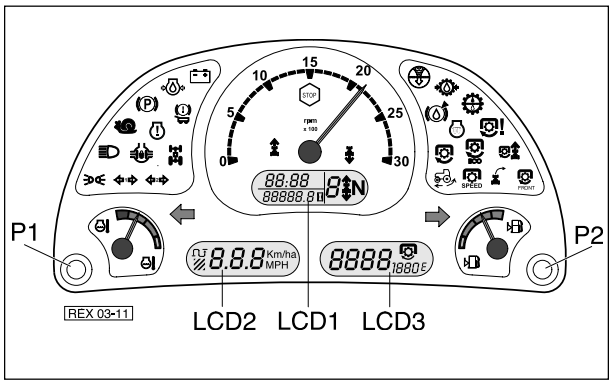


Fig.3-11

When the dashboard is off (ignition key on OFF) the LCD's 2 and 3 do not display anything, but LCD 1 displays the time.
Turning the ignition key from OFF to ON, an auto-check is performed by the instrument, by lighting up all indicators and characters of LCD 1, 2 and 3 . After a few seconds, the instrument goes back to the default status, when the clock, the time worked and the drive direction in the Powershift range are displayed on LCD 1, the ground speed (in Kph or Mph according to the country) is displayed on LCD 2, and the PTO type and speed are displayed on LCD 3.

Turning the ignition key ON-OFF-ON, the instrument always goes back to the above mentioned default status.

By means of the buttons P1 and P2 the instrument can be adjusted in **Normal Mode** or **Parameter Setting Mode**.

Normal mode

Only **LCD2**

Every time the **P1** button is depressed (briefly), **the worked area (ha)** and the **covered distance (Km)** are displayed on LCD2 on the base of the ground speed (Kph)

Fig.3-12

Worked area

In the **worked area** position, depress (briefly) the **P2** button to activate the count of the worked area (the symbol shown in Fig.3-12 flashes 2 - 3 times in a second). Depress (briefly) the **P2** button once again to stop the count (the symbol is now steadily lighted).

Covered distance

In the **covered distance** position, depress (briefly) the **P2** button to activate the calculation of the covered distance (the symbol shown in Fig.3-13 flashes 2 - 3 times in a second). Depress (briefly) the **P2** button once again to stop the count (the symbol is now steadily lighted).

Fig.3-13

Keep the **P2** button depressed for more than 5 sec to reset such counts to zero.
Switch the ignition key ON-OFF-ON to return the instrument to the default status, without however loosing the above mentioned counts.

Parameter setting mode - LCD1, LCD2 and LCD3

With each pressure (longer than 5 sec) on the **P1** button, the set-up procedure for **implement dimensions**, **tyre type** and **clock** is displayed on LCD2, LCD3 and LCD1 respectively.

Implement dimensions
In the **implement dimensions** position (see Fig.3-14) by a brief pressure on the **P2** button it is possible to increase the flashing numbers to be set. Switch to the next number by a brief pressure on the **P1** button, then adjust the flashing value by means of the **P2** button.
To save the set values, keep the **P1** pressed for more than 5 seconds, (thus switching to the next set-up procedure), or simply waiting for 10 seconds (all displays go back to the default status saving the previous settings).

Rear tyre type - "N" see table Fig.3-15b
In the **tyre type** position (see Fig.3-15) by a brief pressure on the **P2** button it is possible to increase the flashing numbers **"N"** to be set. Switch to the next number by a brief pressure on the **P1** button, then adjust the flashing value **"N"** by means of the **P2** button.
To save the set values, keep the **P1** pressed for more than 5 seconds, (thus switching to the next set-up procedure), or simply waiting for 10 seconds (all displays go back to the default status saving the previous settings).

Clock
In the **clock** position (see Fig.3-16) by a brief pressure on the **P2** button it is possible to increase the flashing numbers to be set. Switch to the next number by a brief pressure on the **P1** button, then adjust the flashing value by means of the **P2** button.

To save the set values, keep the **P1** pressed for more than 5 seconds, (thus switching to the next set-up procedure), or simply waiting for 10 seconds (all displays go back to the default status saving the previous settings).

Switch the ignition key ON-OFF-ON to return the instrument to the default status, thus loosing all the settings that had not been saved.

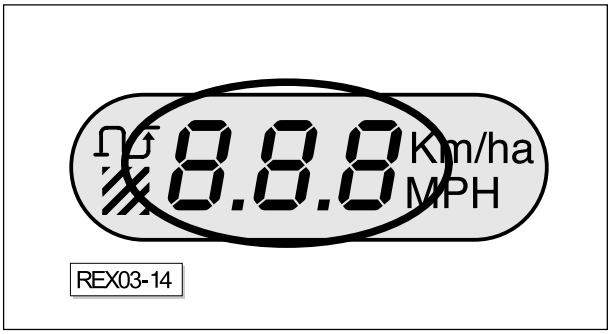


Fig.3-14

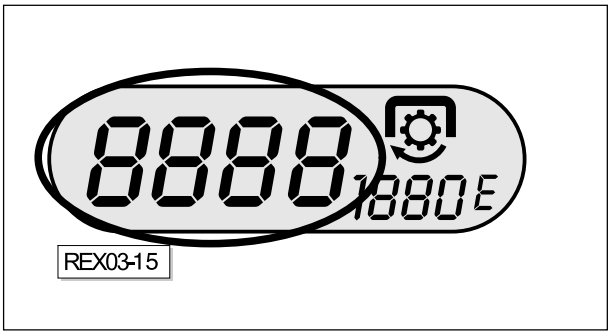


Fig.3-15

Table Fig.3-15b

Rear tyres	R Index	N.
14.9 LR 20	520	**1**
320/70 R 24	525	**2**
375/75 R 20	520	**1**
11.2 R 24	525	**2**
11.2 R 28	575	**4**
12.4 R 24	550	**3**
12.4 R 28	600	**6**
13.6 R 24	575	**4**
360/70 R 24	550	**3**
360/70 R 28	600	**6**
13.6 R 28	625	**7**
14.9 R 24	600	**6**
14.9 R 28	650	**9**
16.9 R 24	625	**7**
380/70 R 24	575	**4**
380/70 R 28	625	**7**
420/70 R 24	600	**6**
420/70 R 28	650	**9**
440/65 R 24	-	**-**

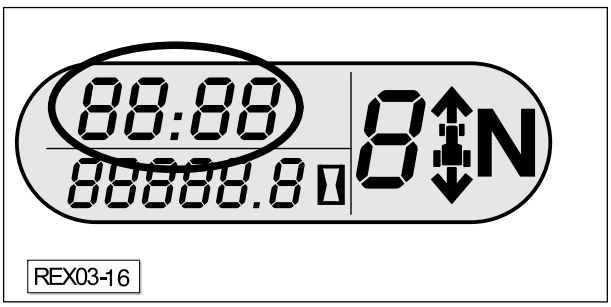


Fig.3-16

Dashboard

Fig. 3-17a Dashboard with mechanical reverse shuttle
Fig. 3-17b Dashboard with Powershuttle

Light switch (1-Fig.3-18)
(1-Fig.3-17a) mechanical reverse shuttle
(1-Fig.3-17b) powershuttle

1 - Light switch for direction indicators and horn. Only operates with ignition switch in the contact position.
A- Forwards: right hand direction indicator.
B- Back: left hand direction indicator.
C- Pressed: horn.

1 - Road light switch: turn the knob at the end of the lever to operate the lights.

Lights off.

Side lights on.

Dipped beams.
Pushed down: driving beams.

Rotating beacon switch (with light switch on)
(2 - Fig. 3-17a/b) (only for some models)

0 - Beacon off.
1 - Beacon on.

Field light switch (with light switch on)
(3 - Fig. 3-17a/b)

0 - Field light off.
1 - Field light on.

Ignition switch
(5-Fig.3-17a) mechanical reverse shuttle
(5-Fig.3-17b) powershuttle

STOP - *No circuit powered. Engine stopped.* The key can be removed.

- *Contact position.* Various users powered. Indicators and controls on.

- *Thermostarter preheating position* for cold weather starting.

START - *Engine start position.* Key automatically returns to power on position when released.

Steering wheel adjustment (6-Fig.3-17a/b)

- Unscrew the knob to adjust the steering wheel height.

- Tighten the knob again to lock the steering wheel in the required position.

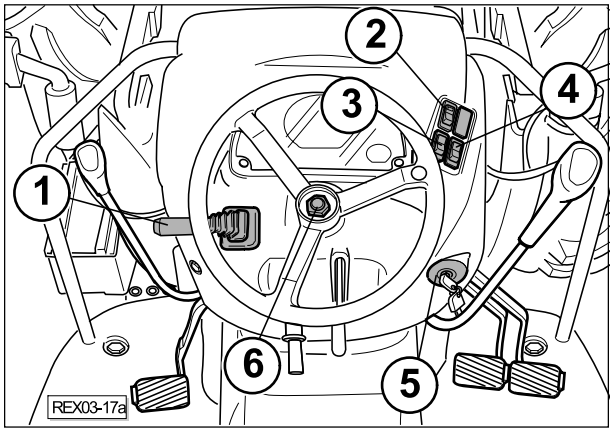


Fig. 3-17a Dashboard with mechanical reverse shuttle

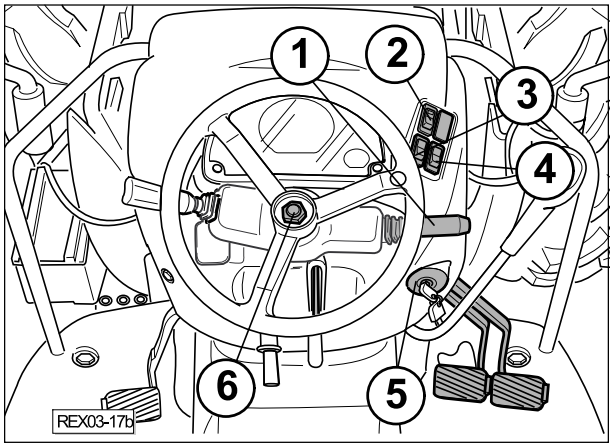


Fig. 3-17b Dashboard with Powershuttle

Hazard light switch (4 - Fig.3-17a/b)

0 - Lights off.
1 - Hazard lights on.

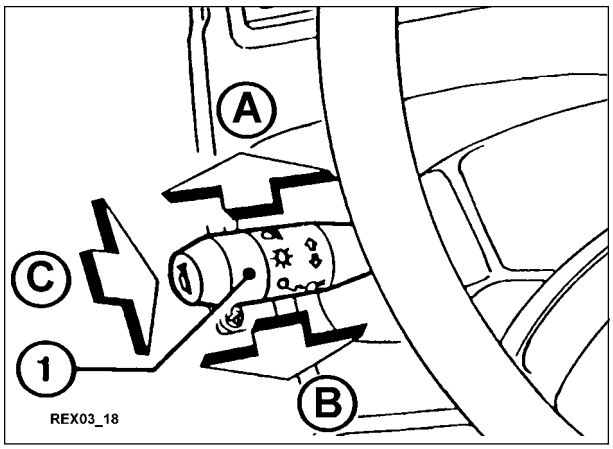


Fig. 3-18- Light and horn switch.

Mechanically controlled power lift

The mechanically controlled power lift is supplied as standard. Fig. 3-19 shows the sector with the relative control levers:

1 - Lift link control lever.
2 - Selector lever for draft control, position control, and draft and position control (INTERMIX).
3 - Locking pin for lever A.
4 - Buttons for quick lift (on request)
5 - Maximum lift adjustment (on request)

***CAUTION:** Use water and a neutral detergent to clean the coatings, the controls and the PU dashboard. Any commercial product to clean car interiors may be used. DO NOT use any kind of solvents or alcohol.*

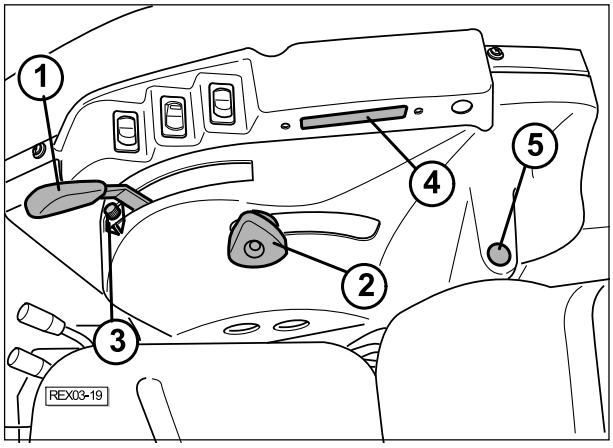


Fig. 3-19

Controls with electronically controlled hydraulic power lift

The electronically controlled hydraulic power lift is available as an option.

Fig. 3-19b shows the control panel:
1 - Control panel of electronic power lift (see description in Chapter 7).
2 - Yellow switch for electro-hydraulic PTO engagement.
3 - Diff lock engaging unit switch.
4 - 4WD engaging switch.
5 - Electro-hydraulic selector switch (option) controlling the control valve to hydraulic top link, levelling ram and rear quick couplings.

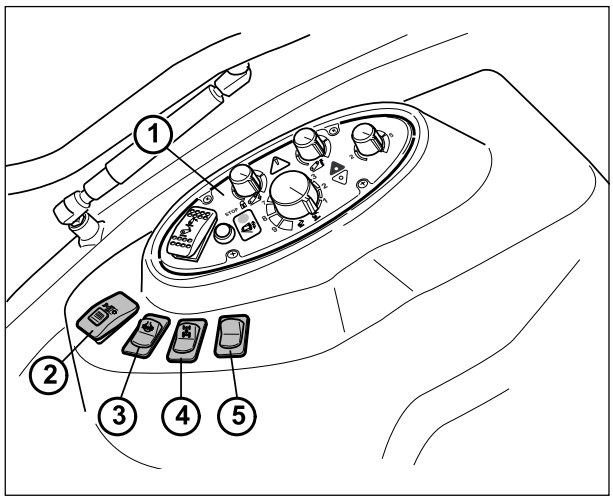


Fig. 3-19b

Seat

The driver's seat can be adjusted in suspension and distance from controls.

Seat suspension
The suspension can be changed according to the driver's body weight by means of a knob (1, Fig.3-20).

Hard suspension: turn the knob in a clockwise direction (+).

Soft suspension: turn the knob in an anti-clockwise direction (-).

Horizontal adjustment

Release the lever (2, Fig.3-20) to move the seat forward or backward.

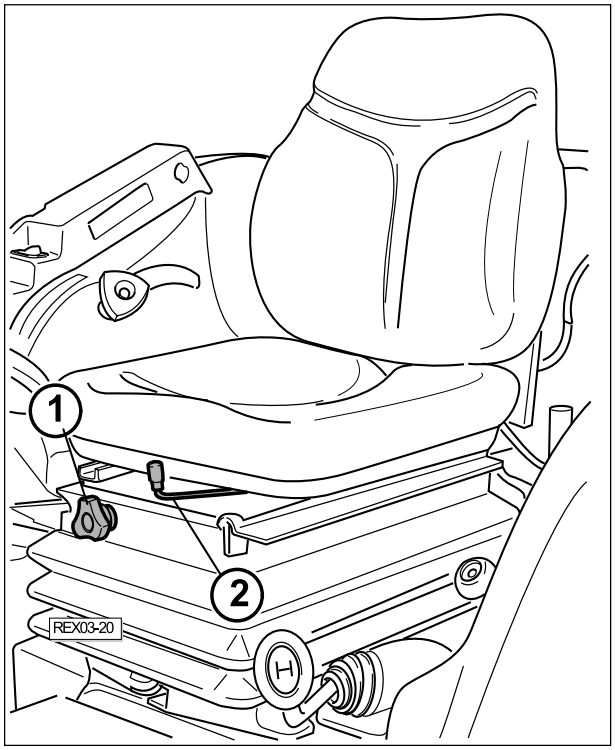


Fig. 3-20 - Driver's seat:
1 - Suspension adjustment;
2 - Horizontal adjustment.

Miscellaneous (Fig. 3-21)

Rear field light (1)

7-pin rear socket for trailer (2).

Quick couplings (3)
Quick couplings of the «Push-Pull» type for auxiliary spool valves are supplied for remote controls.

Oil union for hydraulic trailer braks (4).
(Available on request on certain markets).

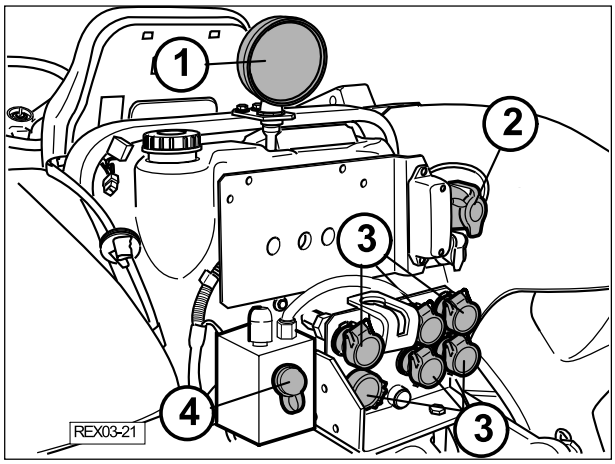


Fig.3-21

Tool box (Fig.3-22)

The standard tool box (1) contains a kit of tools for the daily maintenance.

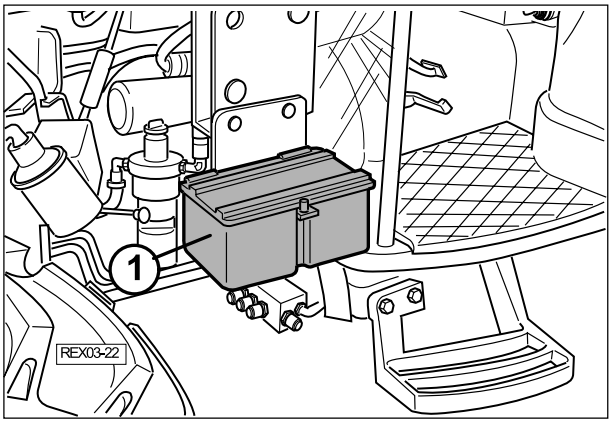


Fig. 3-22

Chapter 4
Operation

OPERATION

***WARNING:** Carefully read the starting instructions on the two "Starting Instructions" decals, one affixed to the side where the driver climbs into the cab and the other on the windscreen in front of the driving seat.*

ENGINE
Starting the engine

***WARNING:** Make sure that the starting system allows the engine to start only when the reverse shuttle lever and PTO low/high selector lever are in the neutral position. If this fails to occur, have the tractor repaired by your dealer or authorized service center.*

A - Check that the reverse shuttle lever, the gearshift lever and the range selector lever are in neutral.
B - Move the PTO low/high speed selector lever to neutral position.
C - Move the hand throttle lever to about halfway position.
D - Depress the clutch pedal all the way.

TURBO ENGINE: Allow the engine to run for a few seconds with the starter motor to allow the turbo compressor to be lubricated.
As soon as the engine starts, accelerate to a 1000-1200 RPM rate without increasing further until the engine has reached the normal operating temperature.

E - Turn the ignition key to the contact position. Wait for the indicator light (1 - Fig.4-1a) to go out, then turn the key to the "START" position. Release the key as soon as the engine fires and quickly set the accelerator lever to the idling speed.

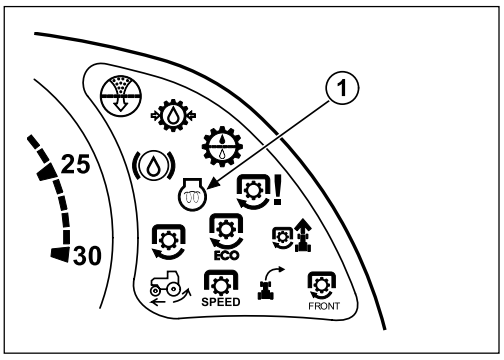


Fig.4-1a

***WARNING:** When the engine is running, keep at a safe distance from the radiator fan.*

WARNING: To prevent accidents, never allow anyone to sit on the mudguards or on any other part of the tractor or implement.

No Passengers !!

Cold weather starting (temperatures below 0°C)(32°F)

***CAUTION:** When outdoor temperatures drop to around or below 0°C. (32°F), check the cooling system and if necessary add the recommended antifreeze.*

***WARNING:** Do not inject fluids (ether) to make the engine easier to start in cold weather. The tractor is equipped with a cold weather starting system.*

Proceed as follows:

- Perform operations a, b, c, d, as instructed above.
- Turn the ignition key to the pre-heat position (the indicator light (1 - Fig.4-1a) comes on and keep it there for 20 seconds, then turn the ignition key to the "START" position. If the engine fails to start within 15 seconds, return the key to the pre-heating position.
- Wait a further 10 seconds and then turn the ignition key to the "START" position again.
- As soon as the engine starts, release the key.
- If the engine fails to start, repeat the pre-heating or starting procedure as described above.

NOTE:
- *If the engine fails to start after two or three attempts and smoke can be seen coming out of the exhaust, repeat the starting procedure without the thermostarter pre-heating phase.*

- *Do not keep the key turned to the start position for more than 15 seconds at a time.*

- *Wait at least 1 minute between one attempt at starting and another.*

If the engine does not start regularly and easily, do not continue as for you may run down the battery. Bleed any air that may have accumulated in the fuel system and, if the problem persists, check that:

- The fuel filters are not blocked.
- The battery and thermostarter are efficient.
- The fuses of the ignition circuit are in good conditions and that the fuel shut-off valve is open (contact your dealer or a specialized workshop).

NOTE: *Before starting a cold engine in cold weather, first cover the radiator with a radiator cover. Remove the cover as soon as a normal working temperature has been reached.*

Running in

It is essential to take the following precautions during the running in period:

1 - Experience has shown that the first 50 hours of use are of fundamental importance for the subsequent performance and working life of the engine. During this period, do not subject the tractor to loads greater than those it will have to deal with during the rest of its working life.

2 - Engage low gears when towing heavy loads.

3 - When running in, check regularly that all screws, nuts and bolts are tight.

4 - To ensure prolonged clutch life, run in the clutch discs correctly.

NOTE: *Use the clutch frequently but carefully during the first 15 hours of use.*

Starting the tractor

***WARNING:** Before moving off, make sure you are perfectly familiar with the brakes, transmission, PTO, diff lock and engine shut off.*

After starting the engine:

1 - Fully depress the clutch pedal, select the gear required and then select the speed range.

***WARNING:** Make sure that the reverse shuttle lever is set for the direction required.*

2 - Release the parking brake.

***WARNING:** Look out of bystanders, especially when backing up.*

3 - Accelerate the engine slightly and gradually release the gearshift clutch pedal.

4 - Move your foot completely off the clutch pedal and slowly accelerate until you have reached the speed you need.

***CAUTION:** Do not keep your foot on the gearshift clutch pedal when driving and remember to check and adjust the clutch to prolong its life and avoid sudden damage to it.*

***CAUTION:** If your tractor is equipped with a mechanical reverse shuttle, always bring the tractor to a complete standstill before changing direction.*

Accelerator pedal

The accelerator pedal can over-ride the setting of the hand throttle lever to accelerate the engine. However, when you release the pedal, the engine returns to the speed set by the hand lever.
When using the accelerator pedal, always set the hand throttle lever to the idling position.

Stopping the tractor

- Reduce the engine speed.

- Depress the gearshift clutch pedal to disengage drive.

- Once the tractor has come to a stop, move the gear lever and speed range lever to neutral before releasing the gearshift clutch pedal.

- Use both pedal brakes to stop the tractor and then apply the parking brake.

Turning off the engine

- Turn the hand throttle lever to the "Idling" position.

- Stop the engine by turning the ignition key to the STOP position to disconnect all electrical circuits.

TURBO ENGINE: Take care when stopping the engine after a period of operation at full load. It is advisable to allow it to idle for 3 or 4 minutes before stopping it. This allows the overheated compressor to cool down to an acceptable temperature.

Clutch

Gearshift clutch pedal (Fig. 4-1).

- Pedal up = drive engaged.

- Pedal down = drive disengaged.

Make your gear changes gradually. When the engine is under load, do not slip the clutch to accelerate, but change to a lower gear.

WARNING:
- Never keep your foot resting on the gearshift clutch pedal when driving.
- Never coast down slopes with the gear lever in neutral.

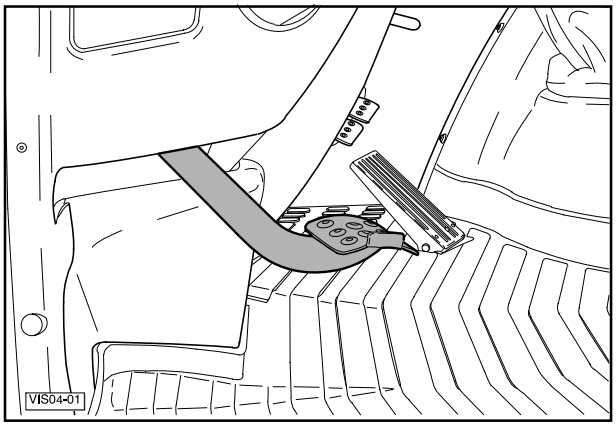


Fig.4-1 - Clutch pedal.

Gearbox - 4WD

The gearbox is available with a number of options to meet specific needs.

Speed Five
Five gear gearbox for four ranges (Low - Standard - High and Creeper) with synchro reverse shuttle, It gives 20 forward speeds + 20 reverse speeds.
15 forward speeds + 15 reverse speeds without creeper.

Power Shuttle
Five gear gearbox for four ranges (Low - Standard - High and Creeper on request) with electro-hydraulic reverse shuttle Power Shuttle. It gives 20 forward speeds + 20 reverse speeds.
15 forward speeds + 15 reverse speeds without creeper.

Power Five
Composed of Power Shuttle and hydraulic HI-LO.
Five gear gearbox for four ranges (Low - Standard - High and Creeper on request) with electro-hydraulic reverse shuttle Speed Tronix. It gives 40 forward speeds + 40 reverse speeds.
30 forward speeds + 30 reverse speeds without creeper.

Gearbox - 2WD at 30 Kph (If mounted)

The gearbox is available with a number of options to meet specific needs.

Speed Four
Four gear gearbox for four ranges (Low - Standard - High and Creeper) with synchro reverse shuttle, It gives 16 forward speeds + 16 reverse speeds.
12 forward speeds + 12 reverse speeds without creeper.

Power Shuttle
Four gear gearbox for four ranges (Low - Standard - High and Creeper on request) with electro-hydraulic reverse shuttle Power Shuttle. It gives 16 forward speeds + 16 reverse speeds.
12 forward speeds + 12 reverse speeds without creeper.

Power Four
Composed of Power Shuttle and hydraulic HI-LO.
Four gear gearbox for four ranges (Low - Standard - High and Creeper on request) with electro-hydraulic reverse shuttle. It gives 32 forward speeds + 32 reverse speeds.
24 forward speeds + 24 reverse speeds without creeper.

Speed Five - Mechanical gearbox 20 forward + 20 reverse speeds

The Speed Five gearbox with mechanical reverse shuttle has 5 synchronized gears for 4 ranges (Low - Standard - High and Creeper), for a total of 20 forward + 20 reverse speeds. 15 forward + 15 reverse speeds without creeper.

Gear lever (1-Fig. 4-4) - 4WD version

The lever has five different positions. All five gears are fully synchronized (Fig. 4-2A).

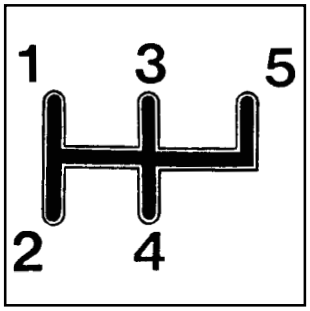


Fig.4-2A
Five lever positions equivalent to five ground speeds.

To change from one gear to another within the same speed range, simply depress the gearshift clutch pedal and move the gear lever to its new position. There is no need to stop the tractor.

Gear lever (1-Fig. 4-4) - 2WD version

The lever has four different positions. All four gears are fully synchronized. (Fig.4-2B)

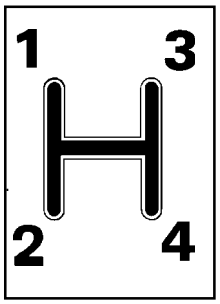


Fig.4-2B
Four lever positions equivalent to four fully synchronized gears

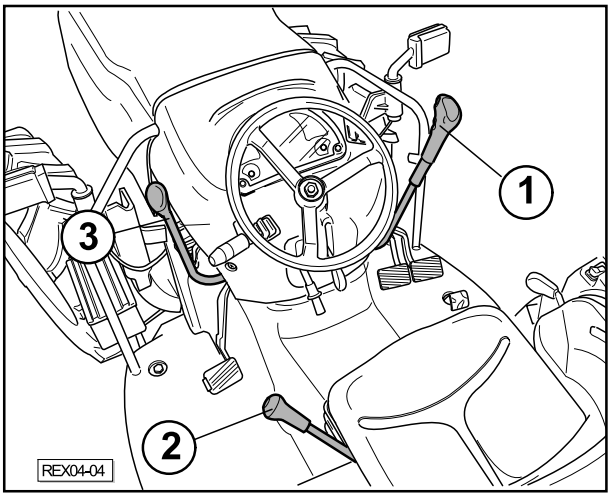


Fig.4-4 - Speed control lever.
1 - Gearshift lever.
2 - Range selector lever: Creep, Low, Normal, High range.
3 - Mechanical shuttle lever.

Speed range selector lever
(2 - Fig.4-4)

The speed range selector lever has four possible positions corresponding to the creeper, low, standard and high speed ranges. Each speed range is identified by a symbol on the knob of the lever (Fig. 4-3).

Fig.4-3
Four lever positions equivalent to four speed ranges.

Creeper range

Low range

Standard range

High range

To change from one speed range to another, disengage the gearshift clutch pedal, and bring the tractor to a complete standstill before moving the speed range selector to its new position.

Reverse shuttle lever

To engage the forward or reverse gears, you must depress the gearshift clutch pedal, stop the tractor and then select the required reverse shuttle lever position. You must do this even if the gears are synchronized.

A - Forward gears.
N - Neutral.
R - Reverse gears.

***CAUTION:** To engage the reverse shuttle with the synchronized engagement, depress the clutch pedal, stop the tractor, then select the required reverse shuttle lever position.*

***WARNING:** Ensure that the safety equipment allow the engine to be started only when the reverse shuttle and PTO control levers are in neutral position. Never disable the safety equipment. If it does not operate correctly, let it be adjusted by specialized personnel only.*

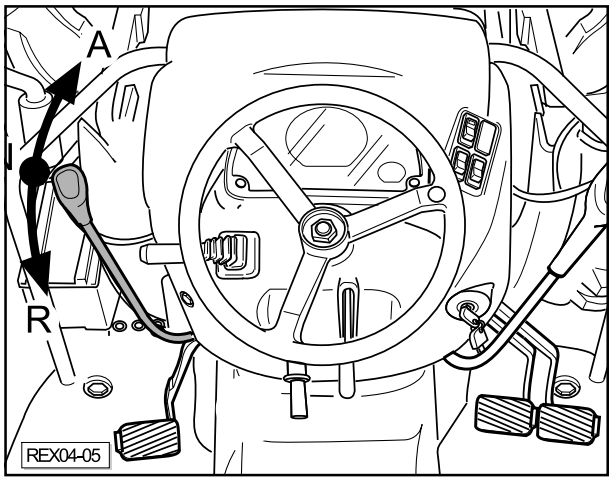


Fig.4-5 - Reverse shuttle control lever.

4WD - Speed Five gearbox with mechanical reverse shuttle 20 forward+20 reverse speeds* with Creeper, 15 FWD + 15 REV* speeds without Creeper.

2WD - Speed Five gearbox with mechanical reverse shuttle 16 forward+16 reverse speeds* with Creeper, 12 FWD + 12 REV* speeds without Creeper. (If mounted)

Speeds are in Kph with engine at max. RPM and with rear tyres as indicated

FORWARD SPEED

MOD. 60GE			
GEAR	320/70 R24	14.9 LR20	375/75 R20
1st Creeper Speed	0.348	0.344	0.334
2nd Creeper Speed	0.546	0.541	0.525
3rd Creeper Speed	0.690	0.683	0.663
4th Creeper Speed	1.018	1.008	0.979
5th Creeper Speed	1.319	1.307	1.268
1st Low	1.659	1.643	1.595
2nd Low	2.608	2.583	2.507
3rd Low	3.294	3.262	3.166
4th Low	4.860	4.813	4.671
5th Low	6.297	6.236	6.053
1st Standard	3.964	3.925	3.810
2nd Standard	6.231	6.170	5.989
3rd Standard	7.869	7.792	7.563
4th Standard	11.610	11.497	11.159
5th Standard	15.043	14.897	14.459
1st High	9.778	9.683	9.398
2nd High	15.369	15.220	14.772
3rd High	19.409	19.221	18.656
4th High	28.638	28.360	27.526
5th High	37.106	36.746	35.665

FORWARD SPEED

MOD. 70GE - 80GE - 75GE - 85GE 95GE - 105GE		
GEAR	360/70 R24	14.9 LR20
1st Creeper Speed	0.373	0.353
2nd Creeper Speed	0.587	0.554
3rd Creeper Speed	0.741	0.700
4th Creeper Speed	1.094	1033
5th Creeper Speed	1.417	1.338
1st Low	1.782	1.683
2nd Low	2.801	2.646
3rd Low	3.537	3.341
4th Low	5.219	4.930
5th Low	6.763	6.387
1st Standard	4.257	4.021
2nd Standard	6.692	6.320
3rd Standard	8.451	7.981
4th Standard	12.469	11.776
5th Standard	16.156	15.258
1st High	10.501	9.917
2nd High	16.506	15.589
3rd High	20.845	19.687
4th High	30.756	29.048
5th High	39.850	37.637

REVERSE SPEEDS

MOD. 60GE			
GEAR	320/70 R24	14.9 LR20	375/75 R20
1st Creeper Speed	0.351	0.348	0.338
2nd Creeper Speed	0.552	0.547	0.531
3rd Creeper Speed	0.697	0.690	0.670
4th Creeper Speed	1.029	1.019	0.989
5th Creeper Speed	1.333	1.320	1.281
1st Low REV	1.676	1.660	1.611
2nd Low REV	2.635	2.609	2.532
3rd Low REV	3.327	3.295	3.198
4th Low REV	4.909	4.862	4.719
5th Low REV	6.361	6.299	6.114
1st Standard REV	4.004	3.965	3.849
2nd Standard REV	6.294	6.233	6.050
3rd Standard REV	7.948	7.871	7.640
4th Standard REV	11.728	11.614	11.272
5th Standard REV	15.195	15.048	14.605
1st High REV	9.877	9.781	9.493
2nd High REV	15.525	15.374	14.922
3rd High REV	19.606	19.416	18.845
4th High REV	28.928	28.648	27.805
5th High REV	37.482	37.118	36.026

REVERSE SPEEDS

MOD. 70GE - 80GE - 75GE - 85GE 95GE - 105GE		
GEAR	360/70 R24	14.9 LR20
1st Creeper Speed	0.377	0.356
2nd Creeper Speed	0.593	0.560
3rd Creeper Speed	0.749	0.707
4th Creeper Speed	1.105	1.043
5th Creeper Speed	1.431	1.352
1st Low REV	1.800	1.700
2nd Low REV	2.830	2.672
3rd Low REV	3.573	3.375
4th Low REV	5.272	4.979
5th Low REV	6.831	6.452
1st Standard REV	4.300	4.061
2nd Standard REV	6.759	6.384
3rd Standard REV	8.536	8.062
4th Standard REV	12.595	11.895
5th Standard REV	16.319	15.413
1st High REV	10.607	10.018
2nd High REV	16.673	15.747
3rd High REV	21.056	19.886
4th High REV	31.068	29.342
5th High REV	40.254	38.018

4WD - Speed Five gearbox with mechanical reverse shuttle 20 forward+20 reverse speeds* with Creeper, 15 FWD + 15 REV* speeds without Creeper.

2WD - Speed Five gearbox with mechanical reverse shuttle 16 forward+16 reverse speeds* with Creeper, 12 FWD + 12 REV* speeds without Creeper. (If mounted)

Speeds are in Kph with engine at max. RPM and with rear tyres as indicated

	MOD. 60F	Rear tyres				
	GEAR	12.4 R28	11.2 R28	13.6 R24	12.4 R24	
		360/70 R28			360/70 R24	320/70 R24
FORWARD SPEED	1st Creeper Speed	0,335	0,321	0,318	0,307	0,292
	2nd Creeper Speed	0,526	0,504	0,500	0,482	0,460
	3rd Creeper Speed	0,665	0,637	0,631	0,609	0,580
	4th Creeper Speed	0,981	0,939	0,931	0,898	0,856
	5th Creeper Speed	1,271	1,217	1,206	1,163	1,109
	1st Low	1,599	1,531	1,517	1,463	1,395
	2nd Low	2,513	2,406	2,385	2,300	2,193
	3rd Low	3,173	3,039	3,012	2,904	2,770
	4th Low	4,682	4,484	4,444	4,285	4,087
	5th Low	6,066	5,809	5,758	5,552	5,295
	1st Standard	3,819	3,657	3,624	3,495	3,333
	2nd Standard	6,003	5,748	5,697	5,494	5,240
	3rd Standard	7,580	7,259	7,195	6,938	6,617
	4th Standard	11,185	10,711	10,616	10,237	9,763
	5th Standard	14,492	13,878	13,755	13,264	12,650
	1st High	9,419	9,020	8,940	8,621	8,222
	2nd High	14,806	14,179	14,054	13,552	12,924
	3rd High	18,698	17,906	17,748	17,114	16,321
	4th High	27,589	26,420	26,186	25,251	24,082
	5th High	35,747	34,232	33,929	32,717	31,203

	MOD. 60F	Rear tyres				
	GEAR	12.4 R28	11.2 R28	13.6 R24	12.4 R24	
		360/70 R28			360/70 R24	320/70 R24
REVERSE SPEEDS	1st Creeper Speed	0,338	0,324	0,321	0,310	0,295
	2nd Creeper Speed	0,532	0,509	0,505	0,487	0,464
	3rd Creeper Speed	0,672	0,643	0,637	0,615	0,586
	4th Creeper Speed	0,991	0,949	0,941	0,907	0,865
	5th Creeper Speed	1,284	1,230	1,219	1,175	1,121
	1st Low REV	1,615	1,546	1,533	1,478	1,409
	2nd Low REV	2,538	2,431	2,409	2,323	2,216
	3rd Low REV	3,205	3,070	3,042	2,934	2,798
	4th Low REV	4,729	4,529	4,489	4,329	4,128
	5th Low REV	6,128	5,868	5,816	5,609	5,349
	1st Standard REV	3,857	3,694	3,661	3,530	3,367
	2nd Standard REV	6,063	5,806	5,755	5,550	5,293
	3rd Standard REV	7,657	7,333	7,268	7,008	6,684
	4th Standard REV	11,298	10,819	10,724	10,341	9,862
	5th Standard REV	14,639	14,019	13,894	13,398	12,778
	1st High REV	9,515	9,112	9,031	8,709	8,305
	2nd High REV	14,956	14,323	14,196	13,689	13,055
	3rd High REV	18,888	18,088	17,927	17,287	16,487
	4th High REV	27,869	26,688	26,452	25,507	24,326
	5th High REV	36,109	34,579	34,273	33,049	31,519

4WD - Speed Five gearbox with mechanical reverse shuttle 20 forward+20 reverse speeds* with Creeper, 15 FWD + 15 REV* speeds without Creeper.

2WD - Speed Five gearbox with mechanical reverse shuttle 16 forward+16 reverse speeds* with Creeper, 12 FWD + 12 REV* speeds without Creeper. (If mounted)

Speeds are in Kph with engine at max. RPM and with rear tyres as indicated

MOD. 70F - 80F - 75F - 85F - 95F - 105F - 75XL - 85XL - 95XL - 105XL

FORWARD SPEED	Rear tyres				
GEAR	**14.9 R28**	**16.9 R24**	**13.6 R28**	**14.9 R24**	**13.6 R24**
	420/70 R28		**380/70 R28**	**360/70 R28**	**380/70 R24**
				420/70 R24	
1st Creeper Speed	0,372	0,360	0,355	0,343	0,326
2nd Creeper Speed	0,585	0,567	0,558	0,539	0,512
3rd Creeper Speed	0,739	0,716	0,704	0,681	0,646
4th Creeper Speed	1,090	1,056	1,039	1,005	0,954
5th Creeper Speed	1,412	1,368	1,346	1,302	1,236
1st Low	1,776	1,721	1,693	1,637	1,554
2nd Low	2,792	2,704	2,661	2,574	2,443
3rd Low	3,526	3,415	3,360	3,250	3,085
4th Low	5,202	5,039	4,958	4,796	4,552
5th Low	6,740	6,529	6,424	6,213	5,898
1st Standard	4,243	4,110	4,044	3,911	3,712
2nd Standard	6,669	6,461	6,357	6,148	5,835
3rd Standard	8,422	8,159	8,027	7,764	7,369
4th Standard	12,427	12,038	11,844	11,456	10,873
5th Standard	16,101	15,598	15,346	14,843	14,089
1st High	10,465	10,138	9,975	9,648	9,157
2nd High	16,451	15,936	15,679	15,165	14,394
3rd High	20,775	20,125	19,801	19,152	18,178
4th High	30,653	29,695	29,216	28,258	26,821
5th High	39,716	38,475	37,855	36,613	34,752

MOD. 70F - 80F - 75F - 85F - 95F - 105F - 75XL - 85XL - 95XL - 105XL

REVERSE SPEEDS	Rear tyres				
GEAR	**14.9 R28**	**16.9 R24**	**13.6 R28**	**14.9 R24**	**13.6 R24**
	420/70 R28		**380/70 R28**	**360/70 R28**	**380/70 R24**
				420/70 R24	
1st Creeper Speed	0,376	0,364	0,358	0,347	0,329
2nd Creeper Speed	0,591	0,572	0,563	0,545	0,517
3rd Creeper Speed	0,746	0,723	0,711	0,688	0,653
4th Creeper Speed	1,101	1,067	1,049	1,015	0,963
5th Creeper Speed	1,427	1,382	1,360	1,315	1,248
1st Low REV	1,794	1,738	1,710	1,654	1,570
2nd Low REV	2,820	2,732	2,688	2,600	2,468
3rd Low REV	3,561	3,450	3,394	3,283	3,116
4th Low REV	5,255	5,090	5,008	4,844	4,598
5th Low REV	6,808	6,596	6,489	6,276	5,957
1st Standard REV	4,286	4,152	4,085	3,951	3,750
2nd Standard REV	6,737	6,526	6,421	6,210	5,895
3rd Standard REV	8,508	8,242	8,109	7,843	7,444
4th Standard REV	12,553	12,160	11,964	11,572	10,984
5th Standard REV	16,264	15,756	15,502	14,994	14,231
1st High REV	10,571	10,241	10,076	9,746	9,250
2nd High REV	16,617	16,098	15,838	15,319	14,540
3rd High REV	20,985	20,329	20,002	19,346	18,362
4th High REV	30,963	29,996	29,512	28,544	27,093
5th High REV	40,119	38,865	38,238	36,985	35,104

Gearbox with electro-hydraulic reverse shuttle Power Shuttle

The gearbox with electro-hydraulic reverse shuttle is available in two versions:

4WD - 40 Kph

- 5 synchronized gears with 4 speed ranges (Creeper - Low - Standard - High) and electro-hydraulic reverse shuttle 20 forward + 20 reverse speeds.
  Without creeper 15 forward + 15 reverse speeds.

- 5 synchronized gears with 4 speed ranges (Creeper - Low - Standard - High) and Power Five electro-hydraulic reverse shuttle with two HIL/LO ranges 40 forward + 40 reverse speeds.
  Without creeper 30 forward + 30 reverse speeds.

2WD - max. 30 Kph

- 4 synchronized gears with 4 speed ranges (Creeper - Low - Standard - High) and electro-hydraulic reverse shuttle 16 forward + 16 reverse speeds.
  Without creeper 12 forward + 12 reverse speeds.

- 4 synchronized gears with 4 speed ranges (Creeper - Low - Standard - High) and Power Five electro-hydraulic reverse shuttle with two HIL/LO ranges 32 forward + 32 reverse speeds.
  Without creeper 24 forward + 24 reverse speeds.

Functions of the electro-hydraulic reverse shuttles Power Shuttle and Power Five (optional).

- Reverse shuttle under load: Allows the driving direction to be reversed by simply moving the small lever on the left hand near the steering wheel. The electronic control unit guarantees smooth and gradual reversing. For safety reasons, the direction can only be reversed at speeds of less than 10 Kph.

- The Declutch system disengages the main hydraulic clutch by means of the button on the actual gearshift lever. With this button the driver can change mechanical gears without using the clutch pedal.

  The clutch pedal is only used for very small movements of the tractor, e.g. to hitch or unhitch an implement, and for greater safety, when sudden stops are made or obstacles are encountered.

- Power Five. The standard mechanical gearbox can be used both in Direct drive and in Underdrive.
  In direct drive each speed of the gearbox can be used, while in underdrive the mechanical ratio is reduced by 20%, thus obtaining more torque.
  The operator can shift from a range to another without using the clutch pedal, under load and while the tractor is moving, simply depressing the button on the gearshift lever: depress + to increase speed, - to slow down.

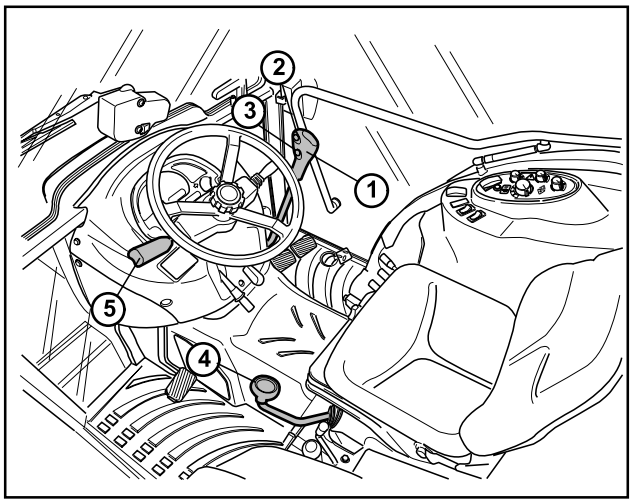


Fig.4-6
1 - Gearshift lever.
2 - Declutch disengagement button (orange).
3 - Power Five button (option).
4 - Range selector lever: Creep, Low, Normal, High range.
5 - Powershuttle and Declutch disengagement lever.

Gear lever

The lever has five different positions. All five gears are fully synchronized (1 - Fig. 4-6).

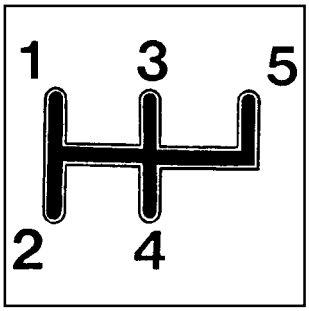


Fig.4-7A
Five lever positions equivalent to five ground speeds.

To change from one gear to another within the same speed range, simply depress the gearshift clutch pedal and move the gear lever to its new position. There is no need to stop the tractor.

Gear lever (1 - Fig.4-6) - 2WD at 30 km/h

The lever has four different positions. All four gears are fully synchronized (1 - Fig. 4-6).

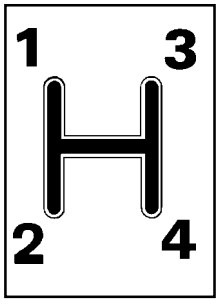


Fig.4-7B
Four lever positions equivalent to four fully synchronized ground speeds.

Speed range selector lever

The speed range selector lever has four possible positions corresponding to the creeper, low, standard and high speed ranges.
Each speed range is identified by a symbol on the knob of the lever.

Fig.4-8
Four lever positions equivalent to four speed ranges.

Creeper range

Low range

Standard range

High range

To change from one speed range to another, disengage the gearshift clutch pedal, and bring the tractor to a complete standstill before moving the speed range selector to its new position.

Power Shuttle control lever

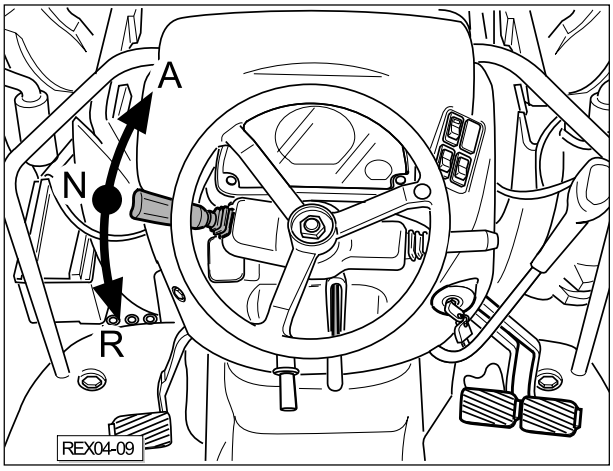


Fig.4-9. Shuttle control lever

A - Lever forward: Forward gears.
N - Neutral: Always move the lever to this position to start the engine.
R - Lever backward: Reverse gears.

Drive direction indicator lights with Power Shuttle and Power Five

Two arrow-shaped lights on the instrument panel show the drive direction (Fig. 4-10).

1 -Forward gears (green)
2 -Reverse gears (orange)
3 -Power Five indicator
1= Reduced range - Underdrive
2= Direct drive
4 -Power Shuttle range indicator
F= Forward gears
N= Power Shuttle in neutral
R= Reverse gears
P= Park lock engaged

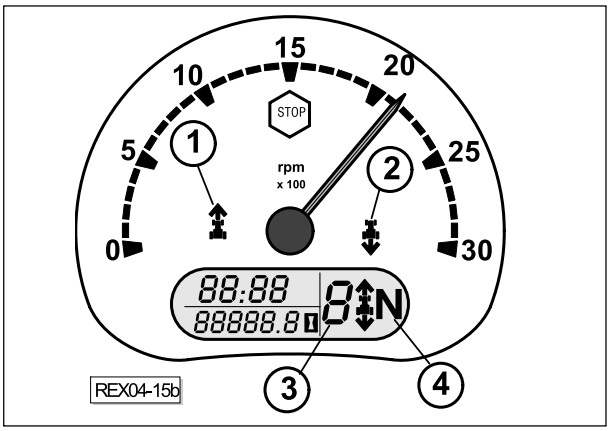


Fig. 4-10

MOD. GE-4WD - Gearbox with electro-hydraulic reverse shuttle Powershuttle 20 FWD - 20 REV (direct drive only). Gearbox with Power Five 40 FWD - 40 REV (Underdrive - direct drive speed ranges)
MOD. GE-2WD - Gearbox with electro-hydraulic reverse shuttle Powershuttle 16 FWD - 16 REV (direct drive only). Gearbox with Power Five 32 FWD - 32 REV (Underdrive - direct drive speed ranges) (If mounted)

Speeds are in Kph with engine at max. RPM and with rear tyres as indicated

MODEL	Mod. 60GE				Mod. 70GE - 80GE - 75GE - 85GE - 95GE - 105GE			
FORWARD	320/70 R24		375/75 R20		360/70 R24		14.9 LR20	
SPEED	Underdrive	Direct	Underdrive	Direct	Underdrive	Direct	Underdrive	Direct
1st Creeper Speed	0.289	0.348	0.278	0.334	0.310	0.373	0.293	0.353
2nd Creeper Speed	0.454	0.546	0.436	0.525	0.488	0.587	0.460	0.554
3rd Creeper Speed	0.573	0.690	0.551	0.663	0.616	0.741	0.582	0.700
4th Creeper Speed	0.846	1.018	0.813	0.979	0.909	1.094	0.858	1.033
5th Creeper Speed	1.096	1.319	1.054	1.268	1.177	1.417	1.112	1.338
1st Low	1.378	1.659	1.325	1.595	1.480	1.782	1.398	1.683
2nd Low	2.167	2.608	2.083	2.507	2.327	2.801	2.198	2.646
3rd Low	2.736	3.294	2.630	3.166	2.939	3.537	2.776	3.341
4th Low	4.038	4.860	3.881	4.671	4.336	5.219	4.095	4.930
5th Low	5.231	6.297	5.028	6.053	5.618	6.763	5.306	6.387
1st Standard	3.293	3.964	3.165	3.810	3.537	4.257	3.340	4.021
2nd Standard	5.176	6.231	4.975	5.989	5.559	6.692	5.250	6.320
3rd Standard	6.537	7.869	6.283	7.563	7.021	8.451	6.630	7.981
4th Standard	9.645	11.610	9.271	11.159	10.359	12.469	9.783	11.776
5th Standard	12.497	15.043	12.012	14.459	13.422	16.156	12.676	15.258
1st High	8.123	9.778	7.807	9.398	8.724	10.501	8.239	9.917
2nd High	12.768	15.369	12.273	14.772	13.713	16.506	12.951	15.589
3rd High	16.125	19.409	15.498	18.656	17.317	20.845	16.355	19.687
4th High	23.792	28.638	22.868	27.526	25.551	30.756	24.132	29.048
5th High	30.826	37.106	29.629	35.665	33.107	39.850	31.267	37.637

MODEL	Mod. 60GE				Mod. 70GE - 80GE - 75GE - 85GE - 95GE - 105GE			
REVERSE	320/70 R24		375/75 R20		360/70 R24		14.9 LR20	
SPEED	Underdrive	Direct	Underdrive	Direct	Underdrive	Direct	Underdrive	Direct
1st Creeper Speed	0.281	0.338	0.270	0.325	0.301	0.363	0.285	0.343
2nd Creeper Speed	0.441	0.531	0.424	0.510	0.474	0.570	0.447	0.538
3rd Creeper Speed	0.557	0.670	0.535	0.644	0.598	0.720	0.565	0.680
4th Creeper Speed	0.822	0.989	0.790	0.951	0.883	1.062	0.834	1.003
5th Creeper Speed	1.065	1.282	1.023	1.232	1.143	1.376	1.080	1.300
1st Low REV	1.339	1.612	1.287	1.549	1.438	1.731	1.358	1.635
2nd Low REV	2.105	2.534	2.023	2.435	2.261	2.721	2.135	2.570
3rd Low REV	2.658	3.200	2.555	3.075	2.855	3.436	2.696	3.245
4th Low REV	3.922	4.721	3.770	4.538	4.212	5.070	3.978	4.788
5th Low REV	5.082	6.117	4.884	5.879	5.458	6.569	5.154	6.204
1st Standard REV	3.199	3.850	3.075	3.701	3.435	4.135	3.245	3.905
2nd Standard REV	5.028	6.053	4.833	5.817	5.400	6.500	5.100	6.139
3rd Standard REV	6.350	7.643	6.103	7.347	6.820	8.209	6.441	7.753
4th Standard REV	9.369	11.278	9.005	10.840	10.062	12.112	9.503	11.439
5th Standard REV	12.140	14.612	11.668	14.045	13.037	15.693	12.313	14.821
1st High REV	7.890	9.498	7.584	9.129	8.474	10.200	8.003	9.634
2nd High REV	12.403	14.930	11.921	14.350	13.320	16.034	12.580	15.143
3rd High REV	15.663	18.854	15.055	18.122	16.822	20.248	15.887	19.123
4th High REV	23.111	27.819	22.213	26.738	24.820	29.876	23.441	28.216
5th High REV	29.944	36.044	28.781	34.644	32.159	38.710	30.372	36.559

MOD. F - GT-4WD - Gearbox with electro-hydraulic reverse shuttle Powershuttle 20 FWD - 20 REV (direct drive only). Gearbox with Power Five 40 FWD - 40 REV (Underdrive - direct drive speed ranges)
MOD. F - GT-2WD - Gearbox with electro-hydraulic reverse shuttle Powershuttle 16 FWD - 16 REV (direct drive only). Gearbox with Power Five 32 FWD - 32 REV (Underdrive - direct drive speed ranges) (If mounted)

MODEL	Mod. 60F		Mod. 70F - 80F - 75F - 85F - 95F - 105F - 75XL - 85XL - 95 XL - 105XL					
FORWARD	12.4 R24		14.9 R28		13.6 R28		13.6 R24	
SPEED	360/70 R24		420/70 R28		380/70 R28		380/70 R24	
	Underdrive	Direct	Underdrive	Direct	Underdrive	Direct	Underdrive	Direct
1st Creeper Speed	0.247	0.298	0.300	0.361	0.286	0.345	0.263	0.316
2nd Creeper Speed	0.389	0.468	0.472	0.568	0.450	0.542	0.413	0.497
3rd Creeper Speed	0.491	0.591	0.596	0.718	0.568	0.684	0.522	0.628
4th Creeper Speed	0.725	0.872	0.880	1.059	0.838	1.009	0.770	0.926
5th Creeper Speed	0.939	1.130	1.140	1.372	1.086	1.307	0.997	1.200
1st Low REV	1.181	1.421	1.433	1.725	1.366	1.644	1.254	1.510
2nd Low REV	1.856	2.234	2.253	2.712	2.147	2.585	1.971	2.373
3rd Low REV	2.344	2.821	2.845	3.425	2.712	3.264	2.489	2.997
4th Low REV	3.458	4.163	4.198	5.053	4.001	4.816	3.673	4.421
5th Low REV	4.481	5.393	5.439	6.547	5.184	6.240	4.759	5.729
1st Standard REV	2.820	3.395	3.424	4.121	3.263	3.928	2.996	3.606
2nd Standard REV	4.434	5.337	5.382	6.478	5.130	6.175	4.709	5.668
3rd Standard REV	5.599	6.739	6.797	8.181	6.478	7.798	5.947	7.159
4th Standard REV	8.261	9.944	10.028	12.071	9.558	11.505	8.775	10.562
5th Standard REV	10.704	12.884	12.994	15.640	12.385	14.907	11.369	13.685
1st High REV	6.957	8.374	8.445	10.166	8.050	9.689	7.390	8.895
2nd High REV	10.936	13.164	13.275	15.980	12.653	15.231	11.616	13.982
3rd High REV	13.811	16.624	16.765	20.180	15.979	19.234	14.669	17.658
4th High REV	20.378	24.529	24.737	29.776	23.577	28.380	21.645	26.054
5th High REV	26.403	31.781	32.051	38.580	30.548	36.771	28.044	33.757

MODEL	Mod. 60F		Mod. 70F - 80F - 75F - 85F - 95F - 105F - 75XL - 85XL - 95 XL - 105XL					
REVERSE	12.4 R24		14.9 R28		13.6 R28		13.6 R24	
SPEED	360/70 R24		420/70 R28		380/70 R28		380/70 R24	
	Underdrive	Direct	Underdrive	Direct	Underdrive	Direct	Underdrive	Direct
1st Creeper Speed	0.255	0.307	0.309	0.372	0.295	0.355	0.271	0.326
2nd Creeper Speed	0.400	0.482	0.486	0.585	0.463	0.558	0.425	0.512
3rd Creeper Speed	0.506	0.609	0.614	0.739	0.585	0.704	0.537	0.646
4th Creeper Speed	0.746	0.898	0.905	1.909	0.863	1.039	0.792	0.954
5th Creeper Speed	0.966	1.163	1.173	1.412	1.118	1.346	1.027	1.236
1st Low	1.215	1.463	1.475	1.776	1.406	1.693	1.291	1.554
2nd Low	1.911	2.300	2.319	2.792	2.211	2.661	2.029	2.443
3rd Low	2.413	2.904	2.929	3.526	2.792	3.360	2.563	3.085
4th Low	3.560	4.285	4.322	5.202	4.119	4.958	3.781	4.552
5th Low	4.613	5.552	5.599	6.740	5.337	6.424	4.899	5.898
1st Standard	2.904	3.495	3.525	4.243	3.359	4.044	3.084	3.712
2nd Standard	4.564	5.494	5.541	6.669	5.281	6.357	4.848	5.835
3rd Standard	5.764	6.938	6.997	8.422	6.669	8.027	6.122	7.369
4th Standard	8.505	10.237	10.324	12.467	9.840	11.844	9.033	10.873
5th Standard	11.019	13.264	13.376	16.101	12.749	15.346	11.704	14.089
1st High	7.162	8.621	8.694	10.465	8.287	9.975	7.607	9.157
2nd High	11.258	13.552	13.667	16.451	13.026	15.679	11.958	14.394
3rd High	14.218	17.114	17.259	20.775	16.450	19.801	15.102	18.178
4th High	20.978	25.251	25.465	30.653	24.272	29.216	22.282	26.821
5th High	27.181	32.717	32.995	39.716	31.448	37.855	28.871	34.752

Use of the Power Shuttle

Starting the engine
Put in neutral:
Starting the engine
Gearbox in neutral:
1 - Orange reverse shuttle lever at the left of the steering wheel (2-Fig.4-11).
2 - PTO switch on the right-hand console (1 - Fig.4-12)
3 - Turn the ignition key clockwise to the contact position 1, then to the ignition position 3.

Forward starting

WARNING: *To start the tractor when the weather is particularly cold, it is advisable to heat the transmission oil by running the engine until it reaches a temperature of 20°C. This ensures that Power Shuttle is able to operate correctly. During the first few minutes of work with the tractor, only change gear with Power Shuttle when strictly necessary until the normal operating temperature has been reached.*

- After engine ignition, select the range (Low, Standard or High) with the relative lever according to the job on hand.
- Engage the required gear.
- Move forward the orange shuttle control lever at the left of the steering wheel.
  Thus the tractor moves automatically forward without using the clutch pedal.

Reverse starting

Proceed as described above, only moving the shuttle lever back.
The tractor automatically starts in reverse.

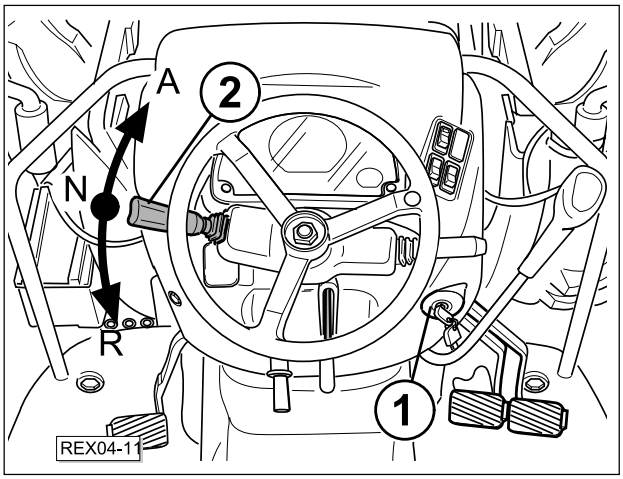
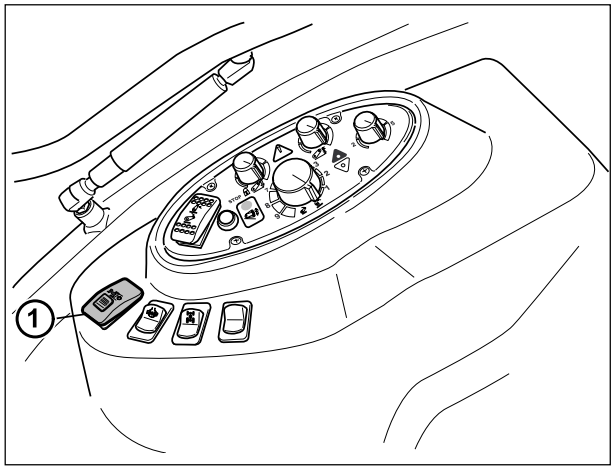
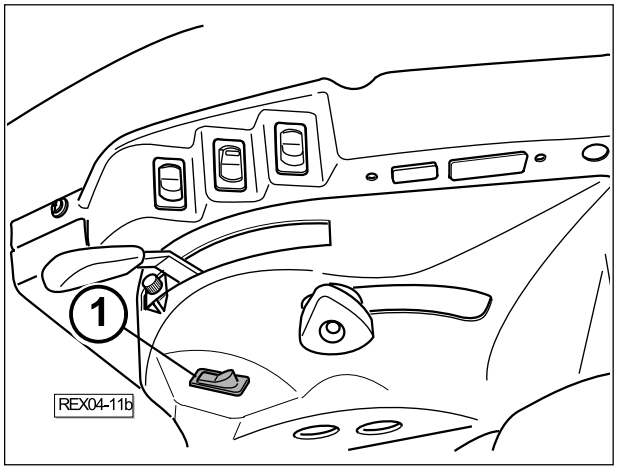


Fig.4-11



Mechanical lift



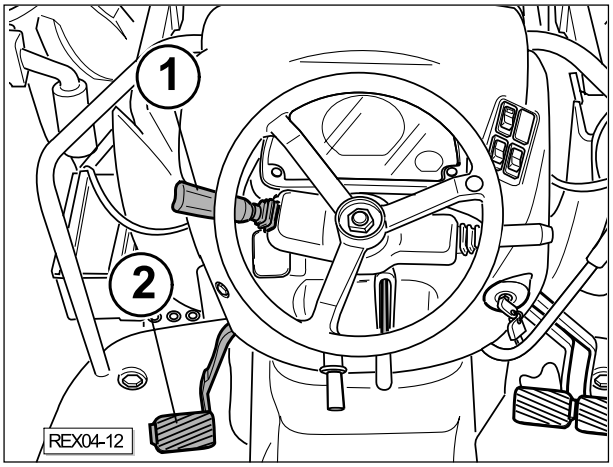
Electronic lift

Fig.4-12

Starting with the clutch pedal (Fig. 4-12b)

The clutch pedal should only be used for precision approaches and manoeuvres.
1. Depress the clutch pedal (2) completely.
2. Move the reverse shuttle lever (1) forward or backwards.
3. Gradually release the pedal to control the tractor movement as necessary.

Starting is usually in direct drive mode. Press the relative buttons on the control lever handle to start the tractor in underdrive mode.



Clutch pedal (Fig. 4-12b)

The clutch pedal is only used for:
- Safety manoeuvres, sudden obstacles, etc.
- Precision approaches, such as implement hitching.
- When the clutch pedal (or the Declutch button) is depressed to select the gear, the gearbox remains in the previously engaged range.

Declutch button (Fig. 4-13)

The Declutch system allows the gear to be changed by pressing the relative orange button on the gearshift lever handle.

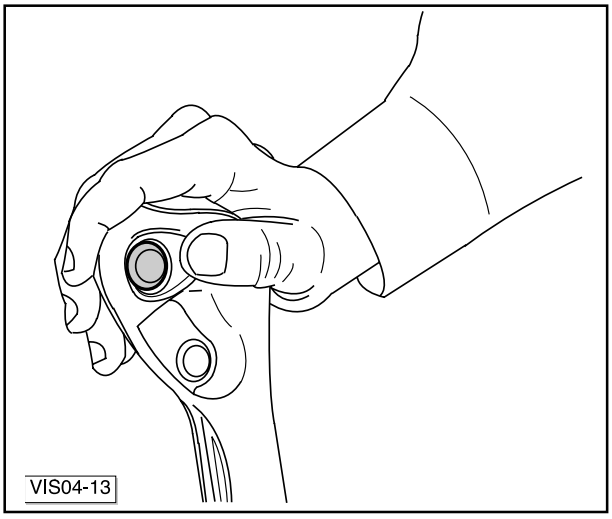


Fig.4-13

Changing gear with the Declutch system.

The Declutch button (Fig. 4-13) practically acts as the clutch pedal.

Press the button to disengage the hydraulic clutch, and keep it depressed while engaging the required gear. Release the button.

Gear change with the clutch pedal (Fig. 4-14)

When the clutch pedal is depressed to change gear, Deltashift remains in the range previously engaged.

Changing the range (creeper, low, standard, high) with the clutch pedal

Depress the clutch pedal and wait for the tractor to stop before selecting a range (creeper - low - standard - high).

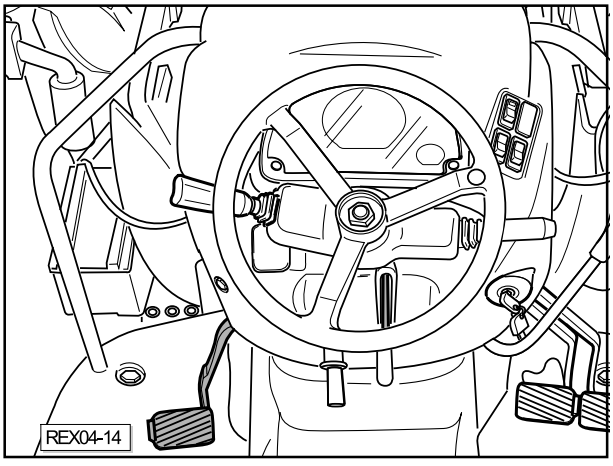


Fig.4-14

Choosing underdrive/direct drive under load

The Power Five system provides the direct drive and underdrive ranges (this latter with -20% of the power available in the direct drive mode). For instance, if the 4th gear is engaged, the following speeds are available: 4th gear in direct drive; 4th gear in underdrive -20%.

To select underdrive/direct range, press the bottom green button on the gearshift lever: changes from direct drive to underdrive and from underdrive to direct drive are automatic and under load (Fig. 4-15).

The selected range is indicated by the relative indicators (Fig. 4-15B).

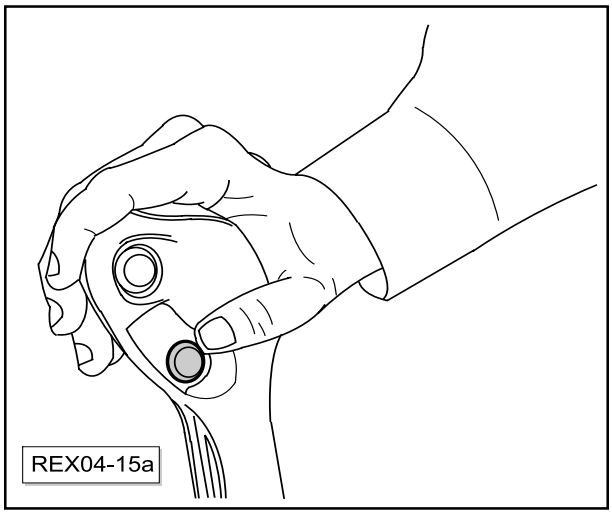


Fig. 4-15a

Reactions to control settings

The monitoring system automatically analyzes the conditions in which the tractor is used and chooses reaction times most suitable to any condition.

Indicators on the instrument

1 - Forward gears - green
2 - Reverse gears - green
3 - Powershift range engaged
1= Reduced range - Underdrive
2= Direct drive range
4 - N= Power Shuttle in neutral
F = Power Shuttle in Forward
R= Reverse
P= Park lock engaged

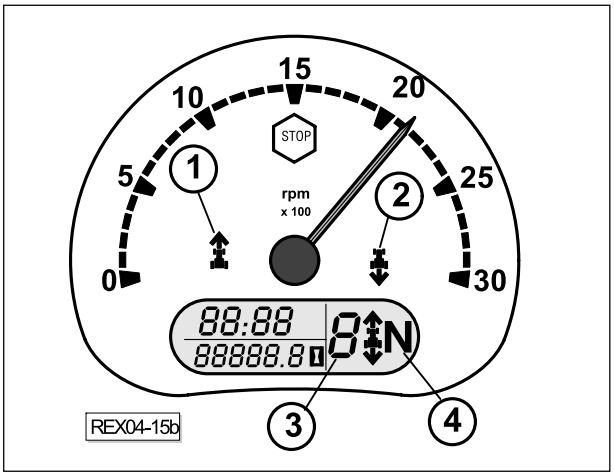


Fig. 4-15b

Use of reverse shuttle under load

The tractor's driving direction is automatically reversed by pushing the orange lever at the left of the steering wheel forwards or backwards (Fig. 4-16).

The reverse shuttle is automatically controlled through the following phases:
- DECELERATION
- STOP
- CHANGE OF DIRECTION
- ACCELERATION

The speed at which these phases take place by software.

Warning: *Reversing can be obtained at any speed. However, to protect mechanical parts from damage, this operation should be made ONLY at speeds UNDER 10 Kph. A buzzer sounds to warn from reversing at speeds over 10 Kph. To correctly engage the reverse shuttle, reduce your speed to under 10 Kph.*

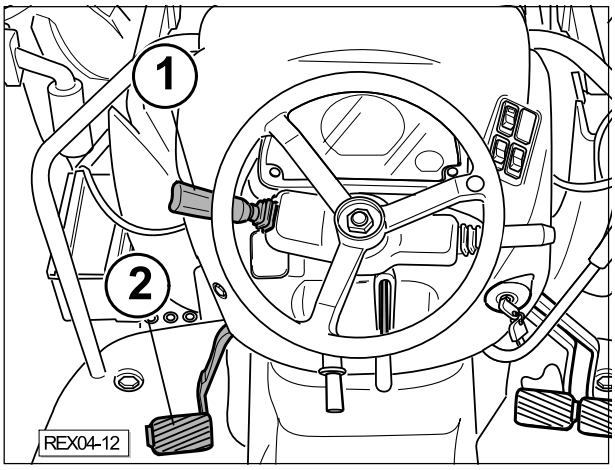


Fig.4-16

Use of reverse shuttle with clutch pedal

The clutch pedal is used to obtain small and precise movements for certain work requirements.

- Completely depress the clutch pedal (2 - Fig. 4-16).
- Shift the orange shuttle control lever.
- Wait for the reverse indicator LED to come on.
- Use your foot on the pedal to engage the clutch gradually and let the tractor move forward or backward as required.

Stopping the tractor
Fig. 4-17a/b
Always stop the tractor safely: Engage the parking brake (1), engage the Park-Lock (3), disengage the PTO, bring all the gearshift levers to neutral position, lower any implement to the ground, stop the engine and remove the ignition key BEFORE leaving the driver's seat.

Park-Lock
Fig. 4-17a/b
The Power Shuttle transmission is mechanically blocked by the lever engaging the Park-Lock device (3). Therefore the Park-Lock should be engaged every time you want to stop the tractor with the engine stopped, particularly when the tractor is on a slope.
To shift the lever (3), pull the block (2) upward.
To engage the Park-Lock (Fig.4-17a/b)
1 - Engage the parking brake (1)
2 - Engage the Park-Lock: Release the locking device (2) and pull up the engagement lever (3).
To disengage the Park-Lock (Fig.4-17a/b)
1 - Release the locking device (2) and lower the lever (3) to disengage the Park-Lock.
2 - Disengage the parking brake (1)

The Park-Lock must be disengaged before using the reverse shuttle. Should the reverse shuttle be engaged in forward or reverse gear with the Park-Lock still engaged, the buzzer sounds until the Park-Lock is disengaged. Disengage the Park-Lock and shift the shuttle switch to neutral.
Now the shuttle can be shifted to forward or reverse gear and the tractor started.

***ATTENTION:** To avoid damage to the Park-Lock system, proceed as follows. Brake first, then engage the Park-Lock. Always disengage the Park-Lock first, then the parking brake.*

***ATTENTION:**When the Park-Lock is engaged, the engine can be started, but not so the tractor, while the buzzer sounds. The Park-Lock must be disengaged for the tractor to start.*

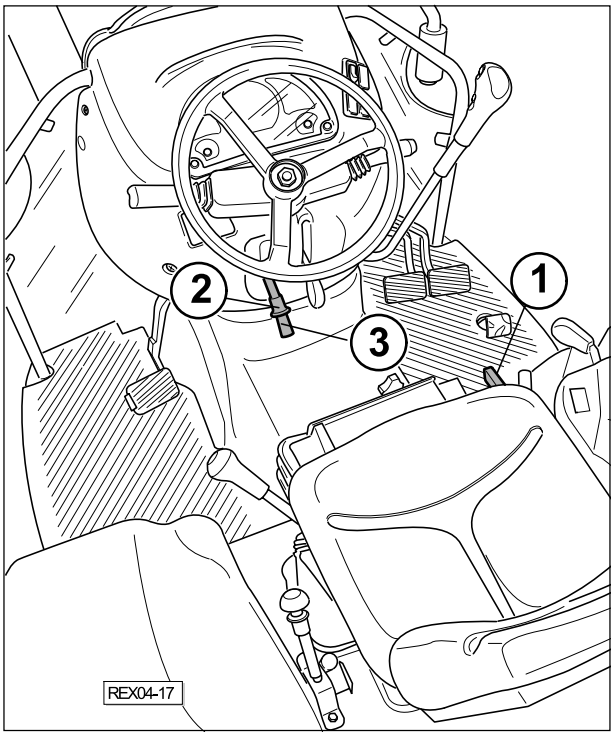


Fig.4-17a

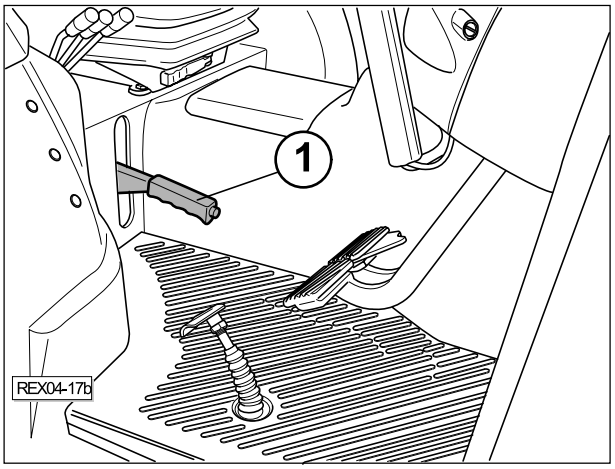


Fig.4-17b

Powershuttle maintenance

Transmission oil: See Lubricant and Fuel Chart.
Carry out the same maintenance operations as described for the standard transmission. The Powershuttle filter should be replaced every 250 hours. This filter is placed under the cab on the right-hand side, near the auxiliary control valves. See the Maintenance chapter for more details.

Powershuttle troubleshooting

A buzzer sounds and the flashing message "AL" followed by a two-digit number appears in the ground speed and PTO RPM digital display on the instrument panel (Fig. 4-18) if the Powershuttle system becomes faulty. The number that follows the letters AL identifies the incorrect manoeuvre or the Powershuttle operational fault, according to the following scale of severity:

AL9+number: highly severe fault.
AL8+number: fault of medium severity.

Please contact your Dealer's Service to have the problem solved.

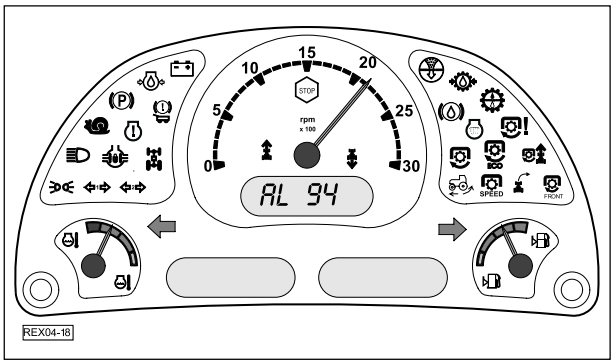


Fig.4-18

PRIORITY 9 - Alarm code AL9.... is blinking on the digital display. Buzzer is on.

Code	Function	Problem detected	Note
AL99	Power fault (+) (-) of sensors	1.Short circuit (detected) 2.Open circuit	Machine in neutral.
AL98	Faulty clutch pedal sensor	1.Short circuit (detected) 2.Open circuit	Machine in neutral.
AL97	Faulty left-hand speed sensor.	1.Short circuit (detected) 2.Open circuit 3.Mechanical fault (damaged sensor)	Machine remains in engaged mode. Autostart allowed. No autodeclutch.
AL96	Faulty right-hand speed sensor	1.Short circuit (detected) 2.Open circuit 3.Mechanical fault (damaged sensor)	Machine remains in engaged mode. Autostart allowed. No autodeclutch.
AL95	Faulty engine RPM sensor	1.Short circuit (detected) 2.Open circuit 3.Mechanical fault (damaged sensor)	Machine remains in engaged mode. All Automode functions are allowed.
AL94	Faulty Park-Lock switch.	1.Short circuit (detected) 2.Open circuit	Machine in normal mode.
AL93	Not used.	-	-
AL92	Not used.	-	-
AL91	Not used.	-	-
AL90	Reverse shuttle lever	1. Mechanical fault (both switches ON)	Machine in neutral. FWD/REV gears disactivated.

PRIORITY 8 - Alarm code AL8.... is blinking on the digital display. Buzzer is on.

Code	Function	Problem detected	Note
AL89	Not used	1.Short circuit (detected) 2.Open circuit	Machine in neutral if lever is on FWD gears. Otherwise, it remains operating. FWD gears are disabled.
AL88	Not used	1.Short circuit (detected) 2.Open circuit	Machine in neutral if lever is on REV gears. Otherwise, it remains operating. REV gears are disabled.
AL87	Declutch button	1.Short circuit (detected) 2.Open circuit	Machine remains in present status, declutch disactivated.
AL86	REVERSE clutch control solenoid valve	1.Short circuit (detected) 2.Open circuit	Machine in neutral if in FWD gears. Further functions are active.
AL85	DIRECT clutch control solenoid valve	1.Short circuit (detected) 2.Open circuit.	Machine in neutral if in FWD or REV gears. Further functions are active.
AL84	Not used		
AL83	Not used		
AL82	Synchronized PTO switch	1.Short circuit (detected) 2.Open circuit	PTO brake solenoid valve ON. Independent PTO engagement is allowed. Further functions are active.
AL81	PTO brake solenoid valve	1.Short circuit (detected) 2.Open circuit	No independent PTO. Further functions are active.
AL80	PTO solenoid valve	1.Short circuit (detected) 2.Open circuit.	No independent PTO. Further functions are active.

SPECIAL CONDITIONS

-	Reversing at speed over 10 kph	Buzzer operating Reversing is possible.
-	Reverse shuttle not in neutral with engaged Park-Lock	Buzzer operating
-	PTO brake solenoid valve, open circuit or short circuit with engaged PTO switch	Buzzer operating
92	PTO brake safety - PTO brake does not stop rotation of rear PTO shaft	Buzzer operating

Mechanical power take-off clutch

PTO clutch control lever (Fig.4-19)

– Pos. A = power take-off engaged.

– Pos. B = power take-off disengaged.

Disengage the PTO clutch by pulling the lever to the coupling point. Depress the button on the lever to release it and disengage the clutch.

2 - Coupling point of PTO engagement lever.

Warning: *When working with the mechanical power take-off, the clutch should be disengaged only for the time strictly needed for the required operations.*

Mechanical PTO engagement

1– Shift lever (1 - Fig. 4-19) in the disengagement position B to disengage the clutch.

2– Select the required PTO speed 540/540ECO/1000 RPM with selector lever (2 - Fig.4-20).

3– Engage the selector lever to operate the PTO (1 - Fig.4-20);

4– Slowly move the control lever (1) to the engagement position (A - Fig.4-19) to engage the PTO.

5– Engage/disengage the PTO during work by the engagement control (1 - Fig.4-19).

Caution: *When the PTO is not in use, keep the clutch disengagement lever (1 - Fig.4-19) in the forward position (clutch engaged) and disengage the PTO with the relative lever (1 - Fig.4-20). During work with the PTO, the clutch should be disengaged only for the time strictly needed for the required operations.*

Warning: *When using the PTO with a stationary tractor, always make sure that the creeper lever of the gearshift is in neutral and that the parking brake is engaged.*

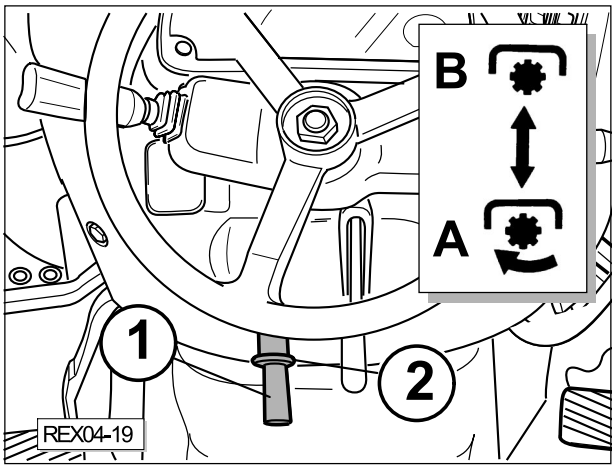


Fig.4-19

Engine - Power take-off RPM meter

For engine - PTO RPM meters and for PTO operation indicator lights, see the "Instrument and controls" chapter (Fig.3-7).

PTO control levers

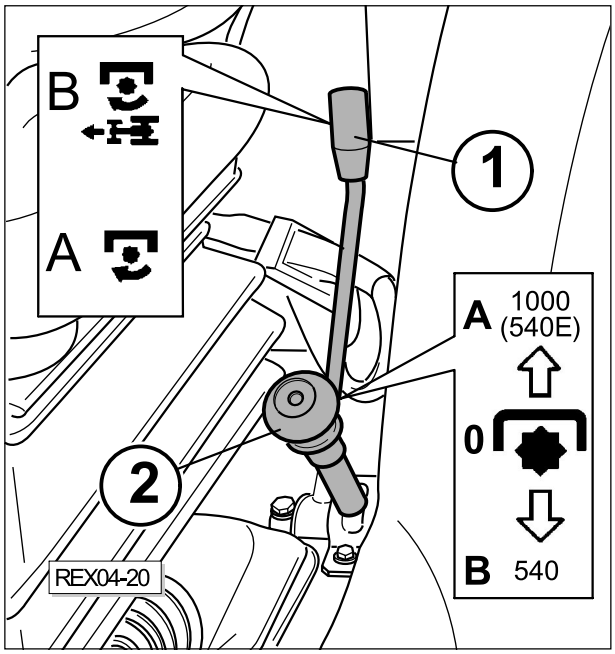


Fig.4-20
1 - PTO operation selector lever
A- Independent power take-off
B - Power take-off synchronized with the gearbox

2 - PTO speed range selector lever
A - Economic 540 PTO or 1000 RPM
0 - Neutral
B - 540 RPM

Electro-hydraulic Power Take-Off

The rear power take-off is fully independent from the transmission. It is engaged by means of a multi-disc oil-cooled hydraulic clutch

The PTO is engaged by a button (1 Fig.4-21a/b).

An indicator light on the instrument panel comes on when the PTO is engaged (9 - Fig. 3-4).

Operation: engagement/disengagement
Engage/disengage the PTO (1 - Fig.4-21a/b) by the button switch with engine at idling speed.

Pos. A PTO disengaged

Pos. B PTO engaged

To engage the PTO, unlock the switch (1) shifting the orange safety button (2) as indicated by the arrow, then depress side B of the switch.

Always shift the switch in the disengaged position (A - Fig.4-21a/b) after using the PTO or before starting the engine.

NOTE: The engine can be started only if the PTO engagement lever is in the neutral position "B".

Engage the PTO slowly to protect the clutch and driveline.

Select the operating mode and the required speed before engaging the PTO.

***IMPORTANT:** For high-inertia implements (e.g. stone crusher, mill etc.) the universal joint for cardan shaft is to be used.*

***WARNING:** When using the PTO with the tractor at a standstill, always make sure that the creeper lever of the gearshift in neutral position and that the parking brake is engaged.*

***WARNING:** High-inertia implements do not stop immediately after the independent PTO has been disengaged. Wait for the implement to slow down or stop completely before performing any cleaning or adjustment operations.*

***IMPORTANT:** When using implements that cause shock loads, always use a safety coupler between the implement and the PTO drive shaft. Before using the implement, check the correct operation both of the safety coupler and of the implement.*

***IMPORTANT:** When using implements with quickly moving parts (such as mowers, reapers, snowplows) ALWAYS fit an overrun device on the implement drive shaft, as a protection against possible PTO faults.*

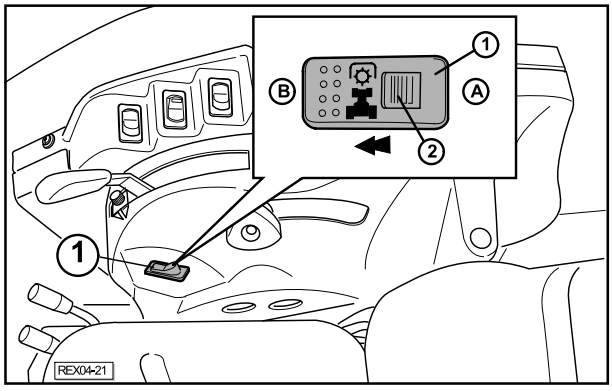


Fig. 4-21a - Mechanical lift

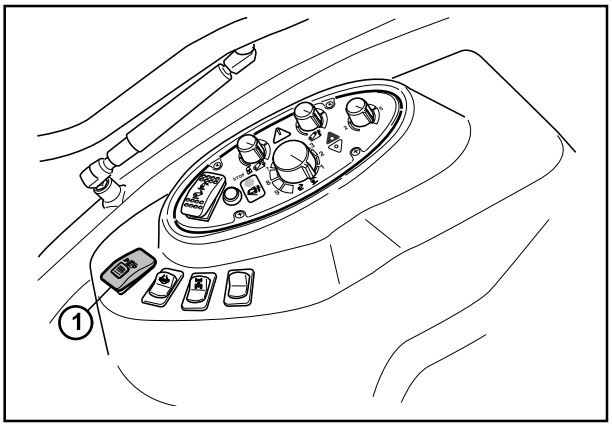


Fig. 4-21b - Electronic lift

Engine - Power take-off RPM meter for electro-hydraulic PTO

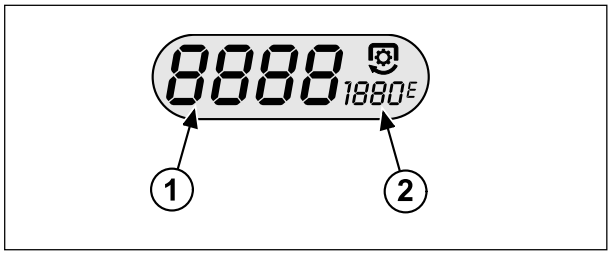


Fig. 4-21c

The indicator (1) displays the operating rate of the PTO with great accuracy. The operating rate of implements for which the rotation speed must be precisely selected can therefore be kept under constant control.
Speed indicator of the PTO engaged (2):
540 RPM; 540 ECO RPM; 1000 RPM

Hydraulic PTO engagement

1– Select the required PTO speed 540/540ECO/1000 RPM with selector lever (2 - Fig.4-22).
2– Engage the selector lever to operate the PTO (1 - Fig.4-22).
3– Operate the switch to engage the PTO (Fig.4-21a/b).
4– Engage/disengage the PTO during work by the engagement control (1 - Fig.4-21a/b).

Hydraulic PTO control levers

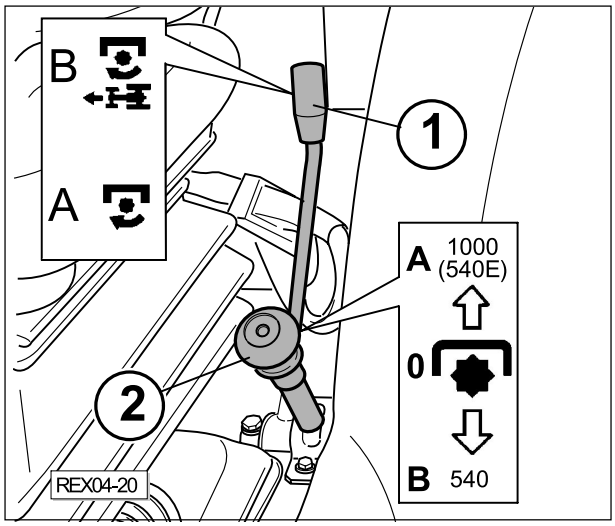


Fig. 4-22

1 - PTO operation selector lever
A- Independent power take-off
B- Synchronized power take-off
2 - PTO speed range selector lever
A - Economic 540 PTO or 1000 RPM
0 - Neutral
B - 540 RPM

Independent power take-off
All types

The PTO can operate at 540 RPM with a 1944 RPM engine rate or at 1000 RPM engine rate with the engine at 1956 RPM. (On request 540ECO RPM with engine at 1375 RPM). It is driven directly by the engine, and its operation is fully independent from the ground speed of the tractor.

Independent PTO engagement

The direct PTO should be engaged with the engine at idling speed and without hesitation. Do not heed any noises due to tooth meshing.
Always keep the lever in "A" position (Fig.4-23), for independent PTO engaged.
The synchronized PTO should be used only if necessary (see "Synchronized PTO" section).

PTO operation - All types

PTO operation selector lever (1 - Fig. 4-23)

Description of the symbols on the decal placed on the right of the control lever (Fig.4-23).

A - Independent PTO engaged.
Directly driven by the engine.

***IMPORTANT:** Always keep the lever in position A during work. Shift the lever to position B only if the synchronized PTO has to be used. Shift the lever to position A again after using the synchronized PTO.*

B - Synchronized PTO proportional to ground speed engaged. (On request)
Driven by the gearbox.

NOTE: *The PTO operation selector lever (1-Fig.4-23) has no neutral position. The mechanical neutral position is obtained by bringing the speed range selector lever (2- Fig. 4-22) in the middle position "O".*

***IMPORTANT:** The PTO mode selector lever, independent or synchronized (optional), controls a mechanical coupler that ensures the maximum safety in both operation modes. The passage from a mode to another, however, is only possible when the teeth are aligned. The procedure is described under the headings "Direct power take-off" and "Synchronized power take-off" hereunder.*

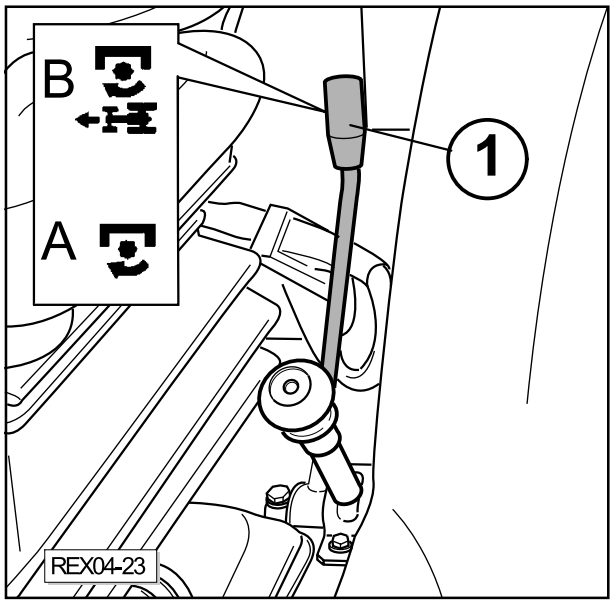


Fig. 4-23

Synchronized Power Take-Off (Optional)

Use of the synchronized rear power take-off with the gearbox is solely designed for towing self-driven trailers and, more generally, for all those farming implements which have to operate synchronised with tractor movement and which do not require more than 40 - 45% of rated engine power.
Engage the synchronized power take-off with the tractor at standstill. Depress the clutch pedal to disengage the gearshift clutch and shift the lever (1- Fig. 4-24) to the "B" position.

Synchronized PTO engagement

The synchronized PTO has to be engaged without applying any force, with the engine at idling speed. Move the tractor a little forward to make the engagement easier. Sometime you may need to engage the hydraulic PTO clutch for an instant in order to allow the gear teeth to align and make their engagement easier. When the synchronized PTO is not used, the lever should be shifted to the direct PTO position (lever 1, position A - Fig. 4-24).

***IMPORTANT:** When using the synchronized PTO and if you are forced to reverse once or several times, remember that the driveline inverts its spinning direction. Thus, with certain implements, it is advisable to disengage the PTO when reversing in order to avoid major damage (lever 2, position O - Fig. 4-25).*

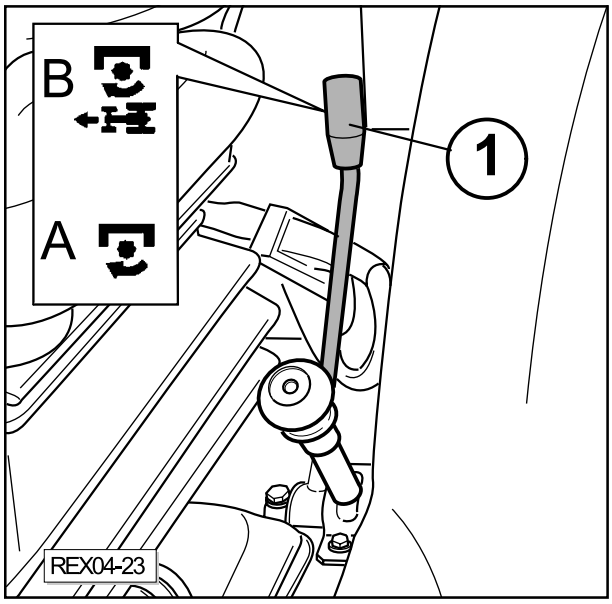


Fig. 4-24

Synchronized PTO revolutions (optional)

Whichever forward gear is engaged, the splined shaft of the PTO accomplishes, for each turn of the rear wheels:

Model	PTO driveline revolutions		
	540 RPM	540E RPM	1000 RPM
60GE	7.1259	9.9472	13.3843
70-80-75-85GE	6.9573	9.7118	13.0676
95-105GE	6.9573	9.8220	13.0676
60F	8.47	11.828	15.92
70-80-75-85F 75-85XL	8.2735	11.5491	15.5398
95-105F 95-105XL	8.2735	11.6802	15.5398

Speed range selection

The speed range selector lever (2 - Fig. 4-25) allows to change from 540 RPM PTO tp 1000 RPM (or 540ECO RPM) and back. This lever has three positions:

A - PTO at 540 RPM
0 - PTO in neutral
B - PTO at 1000 RPM or 540ECO RPM

***CAUTION:** When the PTO is not used, the speed range selector lever should always be in neutral position (lever 2, position O, Fig. 4-25).*

***CAUTION:** For the hydraulic PTO, disengage the PTO clutch (lever 1, position B, Fig. 4-19) and operate the switch (1 - Fig.4-21) before switching between two speed ranges.*

***WARNING:** Only use PTO at 540 RPM (or 540ECO) or at 1000 RPM to drive implements designed for such respective rotation speeds. Never allow the PTO shaft to rotate at more than 630 RPM with implements designed for 540 RPM.*

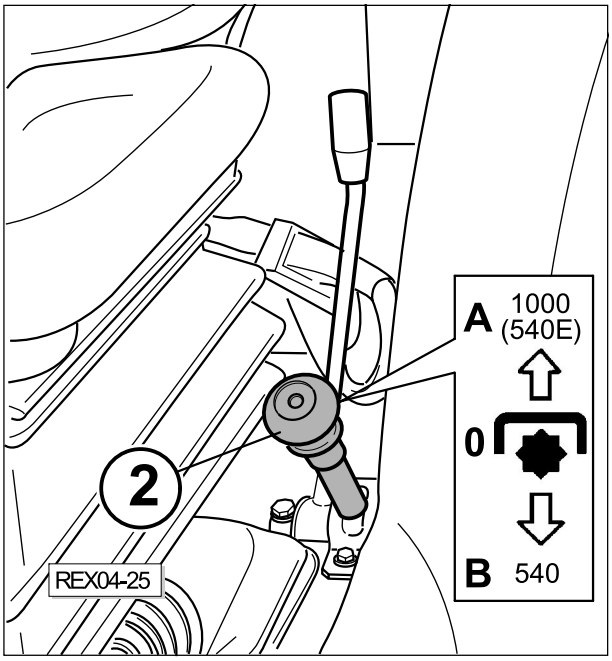


Fig. 4-25

Economy PTO

A PTO speed of 540 RPM can be obtained for implements that do not require maximum power, such as fertilizer spreaders, sprayers, etc.) by using the PTO at 540ECO RPM and decelerating to 1375 RPM. The PTO economy mode has a number of advantages, including a reduction in fuel consumption, noise and vibrations.

***WARNING:** Economy PTO 540 ECO runs at 1375 RPM. Never exceed 1890 RPM engine rate (corresponding to 630 RPM of the PTO driveline) to avoid major damages to the driveline itself and the connected implement.*

PTO overspeed (NAO markets only)

The indicator light (1 - Fig.4-25b) on the dashboard comes on if the max. allowed rated PTO speed is exceeded. Reduce the engine rated speed to reduce the PTO speed.

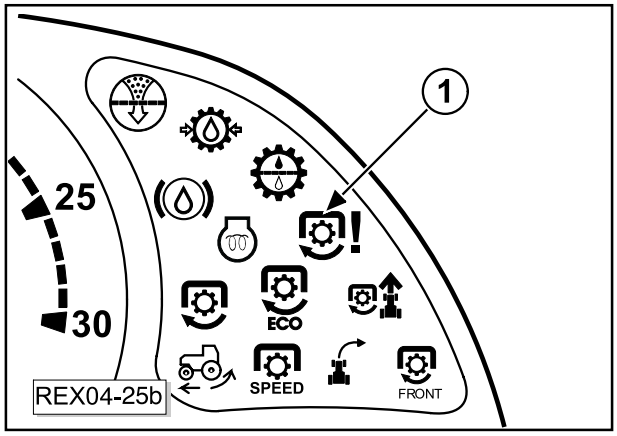


Fig. 4-25b

Interchangeable PTO shaft

Different PTO output shafts are available (Fig. 4-26):

- diameter 1 3/8" (34.9 mm.) shaft with 21 splines for 1000 RPM power take-off, standard assembly (2).

- diameter 1 3/8" (34.9 mm.) shaft with 6 splines for the 540 RPM PTO, provided with the tractor (1).

***Caution:** Onlyuse the PTO driveline for 540 RPM if the implement used requires a power greater than 56 kW (75 HP) since damage to the driveline itself and to the connected implements could injure bystanders. Implements requiring 56 kW (75 HP) may be used only with PTO drivelines at 1000 RPM.*

Proceed as follows to change the shaft:
- Remove the three fixingbolts (1- Fig. 4-26) and the guard (2 - Fig. 4-26)
- Remove the four fixing bolts (3 - Fig. 4-27) and replace the output shaft 1 or 2 (Fig. 4-27)
- Correctly tighten the four fixing bolts of the output shaft (3 - Fig. 4-27).
- Mount the guard again (2 - Fig. 4-26) with the relative bolts.

After mounting the shaft, select the correct rotation speed by means of the relative lever.

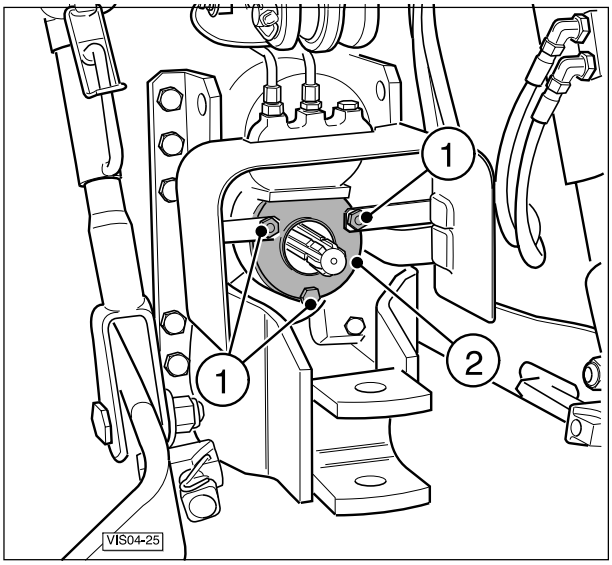


Fig. 4-26 - Replacing the interchangeable PTO shaft.

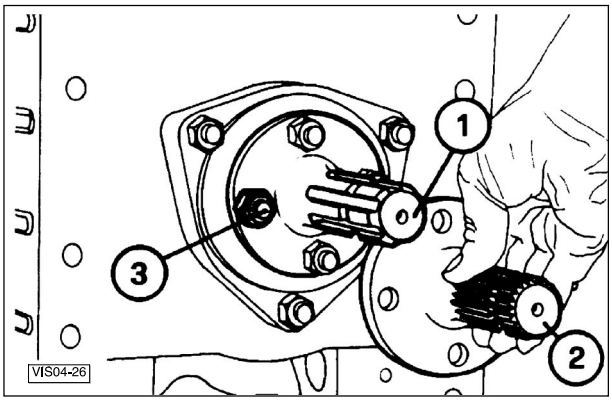


Fig. 4-27 - Replacing the interchangeable PTO shaft.

Precautions when using the PTO

***WARNING:** PTO drivelines and implements operated by the PTO can be extremely dangerous. It is important to comply with the following instructions:*

***WARNING:** Never drive without the PTO caps (2) or protection (1) mounted. These components protect the operators from injury and the shaft splines from damage (Fig. 4-28).*

***WARNING:** Before connecting, adjusting or working on implements operated by the PTO, disengage the PTO, stop the engine, remove the ignition key and engage the parking brake. Never work under raised implements.*

***WARNING:** Make sure that all implements operated by the PTO are fitted with the correct protections, are in a good condition and comply with the laws in force.*

***WARNING:** Before driving an implement through the PTO, ALWAYS make sure that all bystanders are well away from the tractor.*

***WARNING:** Fix the draw bar in the central position when using implements operated by the tractor's PTO.*

***WARNING:** When using the PTO with the tractor at a standstill, always make sure that the gears are in neutral position and that the parking brake is engaged.*

***WARNING:** Before starting up any PTO-driven implement hitched to the three-point linkage, lift the implement to its full height and check that at least 1/4 of the total length of the telescopic section of the drive shaft is engaged. Adjust the height limiter on the electronic power lift to limit the maximum height of the stroke.*

Paddy fields warning

When using the tractor in paddy fields or marshy ground, where the water level could rise above the height of the PTO, ask your dealer for instructions on all necessary waterproofing and sealing measures. If such measures are not taken, the guarantee could be rendered invalid.

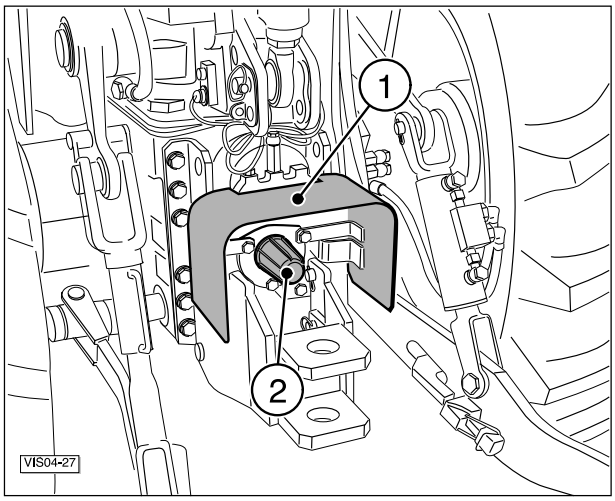


Fig.4-28 - PTO shaft guards

***WARNING:** Never exceed 630 RPM with implements designed for 540 RPM*

***WARNING:** Economy PTO 540 ECO runs at 1375 RPM. Never exceed 1890 RPM engine rate (corresponding to 630 RPM of the PTO driveline) to avoid major damages to the driveline itself and the connected implement.*

Brakes

The rear and front brakes are multi-disc oil bath units. Brake action is hydraulic, controlled by pumps operated by the pedals.
A brake fluid reservoir keeps the brake circuit supplied with fluid.

WARNING: When changing or topping up the brake fluid in the reservoir, see the Fuel and lubricant chart.

Main brakes

The main brakes are operated by means of two pedals (2 - Fig. 4-29), one for each rear wheel. Braking on one side assists steering in tight manoeuvres. By locking the rear wheel on the inside of a curve, you can virtually turn the tractor around on its own axis. For simultaneous braking during normal use and for on-road use, simply lock the two pedals together with the special brake coupling lock (3 - Fig. 4-29). It becomes even more important to do this if the tractor is also equipped with front brakes, since a device installed in the hydraulic control circuit only allows the front brakes to be used if the two pedals are operated at the same time.

WARNING: Always keep the brake pedals coupled for on-road driving to ensure simultaneous braking on all four wheels. Never use the brakes independently when driving on public roads.

WARNING: If you ever notice the brakes becoming less effective, identify the cause immediately and repair. When working on slopes, avoid using the brakes as much as possible and select a lower gear in order to use engine braking.

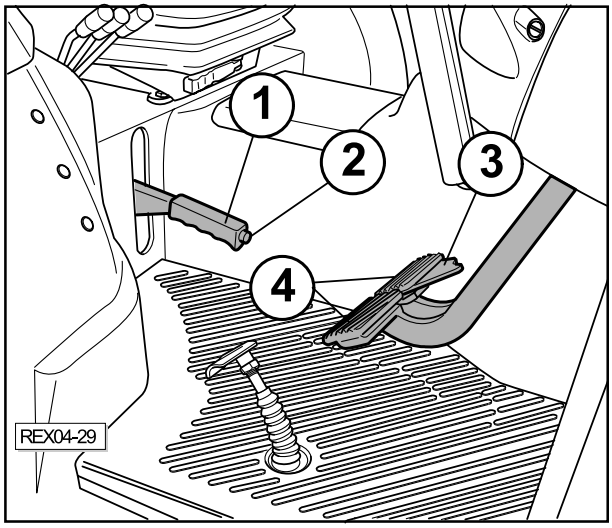


Fig.4-29 - Brakes

Parking brake

A hand lever (1 - Fig. 4-29) controls the parking brake. This acts, via a series of linkages, directly on the brake discs and is fully independent of the foot brakes. The parking brake can therefore also be used as an emergency brake.
The parking brake lever is held in place by a ratchet mechanism.
To release the lever, simply press the button at the end of the lever (2 - Fig.4-29).
A red warning light on the instrument panel comes on to show that the parking brake is engaged.

Hydraulic trailer brake (Approved for ITALY) - Fig. 4-30

The tractor braking system can be equipped with a hydraulic valve (2) which, if connected to the hydraulic circuit of the trailer brakes, allows the trailer itself to be braked along with the tractor. .
Comply with the following instructions to correctly connect and disconnect the flexible trailer brake tube to and from the union (1) at the rear of the tractor and to always operate in conditions of the utmost safety.

The trailer-tractor connecting tube can be connected and disconnected with the engine either running or at a standstill:

- With the engine at a standstill: there are no difficulties when either connecting or disconnecting as there is no oil pressure in the brake circuit.

- With the engine running: it is essential to engage the hand brake since this ensures that no pressure remains in the brake circuit.

***WARNING:** It is extremely important to always carry out this operation before detaching the trailer from the tractor since it ensures the immediate action of the automatic safety braking system with which this trailer braking system is obligatorily equipped.*

There is a specific indicator light (3) on the control panel of the tractor which keeps the operator constantly informed about the operating conditions of the trailer brake oil tap.

Indicator light off:
- When the oil tap is not connected to the trailer.
- When the pressure of the oil in the circuit is regular with the trailer connected.

Indicator light on:
- When the engine is at a standstill and the ignition key is turned to first position.
- When the hand brake is engaged with the engine running.

***WARNING:** If the indicator light should come on in conditions differing from those mentioned above, this means that there is a fault in the braking system and that use of it must immediately stop for safety reasons.*

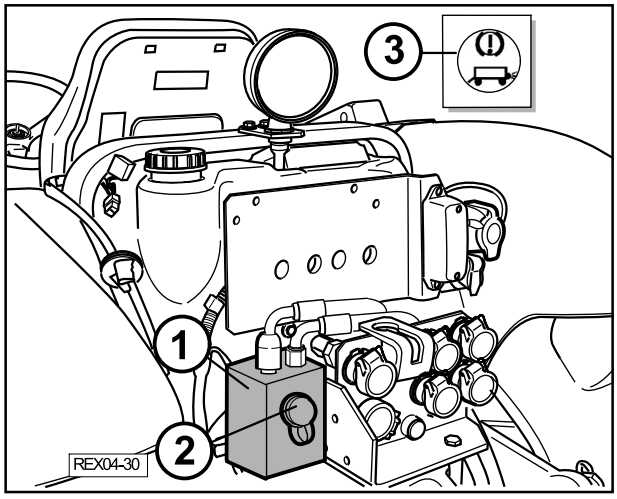


Fig.4-30 -Hydraulic trailer braking tap (Approved for ITALY).
1 - Valve unit.
2 - Oil tap union.
3 - Indicator light on dashboard.

Hydraulic trailer brake (Approved for FRANCE and EXPORT market) (Fig. 4-31)

The tractor braking system can be equipped with a dedicated hydraulic valve (1) that, if connected to the hydraulic circuit of the trailer brakes, allows the trailer to be braked along with the tractor.
The flexible tube of the trailer brakes should be connected to the union (2) installed at the rear of the tractor.

***WARNING:** Always take great care during these operations. Your safety and other persons' is at stake!*

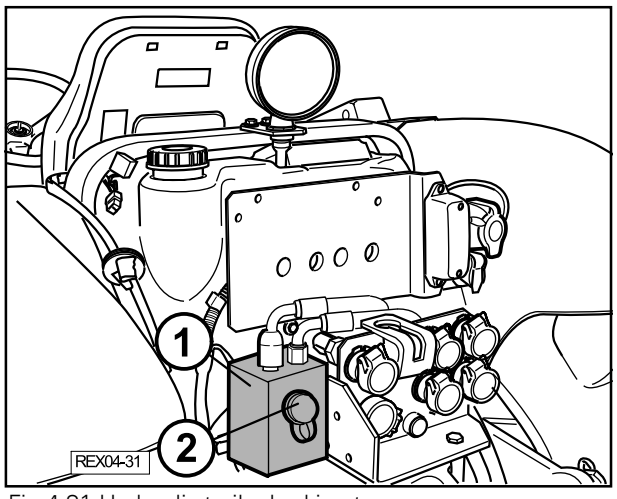


Fig.4-31-Hydraulic trailer braking tap
(Approved for FRANCE and EXPORT market).

1- Valve unit.
2- Oil tap union.

Locking the differential

The tractors are fitted with a system for locking the differential on the rear and front axles on 4WD models. The system is used when a wheel slips because of lack of grip. To lock the differentials, just press the button (1 - Fig. 4-32a/b) under the control panel of the electronic power lift for a second. If the tractor is fitted with 4WD with Hydralock system, this control not only locks the rear differential, but also the front one.

A yellow function indicator on the instrument panel lights up to indicate that the diff lock is engaged (cab versions only).

NOTE: *For the best results, engage the diff lock before the wheels are likely to slip. Do not engage the lock while one of the wheels is actually slipping. Do not lock the differential without previously depressing the clutch pedal.*

Keep the differential locked until the driving wheels do not slip any more. Just depress both brake pedals to unlock the differential.

***WARNING:** Never use the diff lock when driving the tractor on public roads.*

Four-wheel drive

4WD increases traction on broken ground, muddy and slippery surfaces, etc.

Press the button (2 - Fig. 4-32 a/b) to engage or disengage 4WD.

Both operations must be carried out while the tractor is on the move, on a straight stretch and never under load.

NOTE: *Only use four-wheel drive when strictly necessary. Avoid use of 4WD when maximum traction is not required, e.g. on hard ground, roads, etc., since this would only increase tyre wear unnecessarily.*

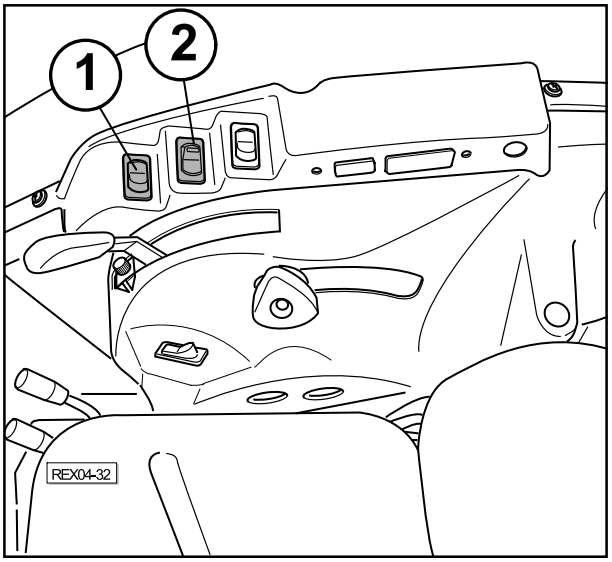


Fig.4-32a - Mechanical lift

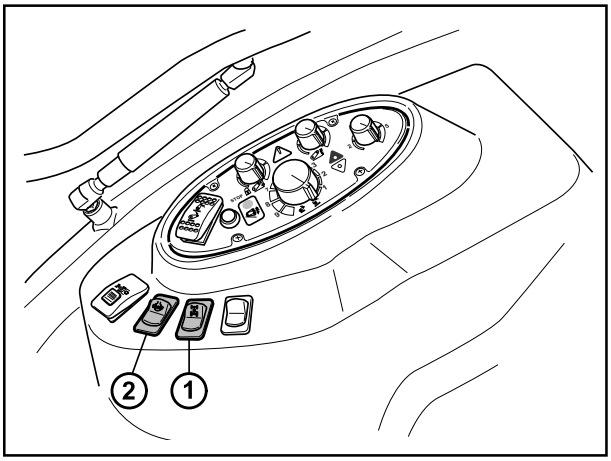


Fig.4-32b - Electronic lift

Adjusting wheel tracks

Adjusting wheel tracks on 2WD axles (if available)

The front wheel track of tractors with two driving wheels can be adjusted to different widths in steps of 100 mm (3.94") each.

Proceed in the following way to adjust track width (Fig. 4-33 and 4-34):

- Jack up the front axle.
- Unscrew and remove the nuts, bolts (1) and washers that hold the sliding ends.
- Remove the bolt (2) that fastens the track rod clamp.
- Slide the RH end sideways and fix it at the required track width.
- Repeat the same operation for the LH end. The position of the hydraulic steering cylinder must also be adjusted by moving the support (4) to one of the five positions (5) that corresponds to the required track width.

The wheel nuts should be fastened to a torque of 120-145 Nm.

***CAUTION:** Make sure that the weight is evenly distributed and the wheels firmly secured on the ground when jacking up the tractor. Fasten all bolts and nuts to the correct torque.*

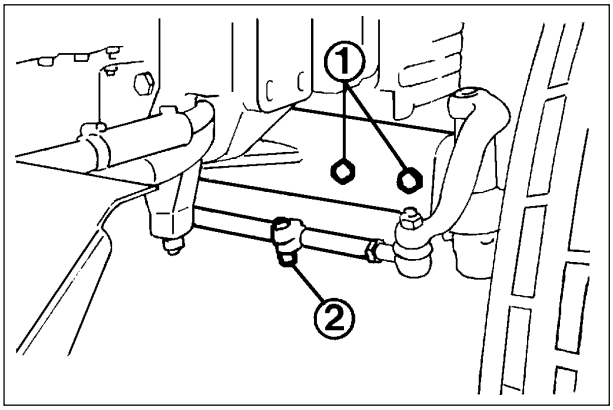


Fig.4-33

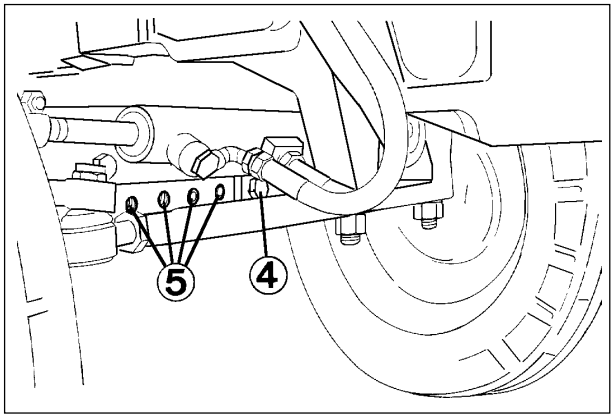


Fig.4-34

4WD front axle

Adjusting the max. steering angle

The maximum steering angle of the 4WD front axle can be varied depending on the type of tyre mounted and the way the tractor is used. The angle is changed by adjusting the stop screw (1 - Fig. 4-36) on the final drive of the axle.

This adjustment is very useful when adopting minimum track since it prevents the wheels from interfering with the engine housing.

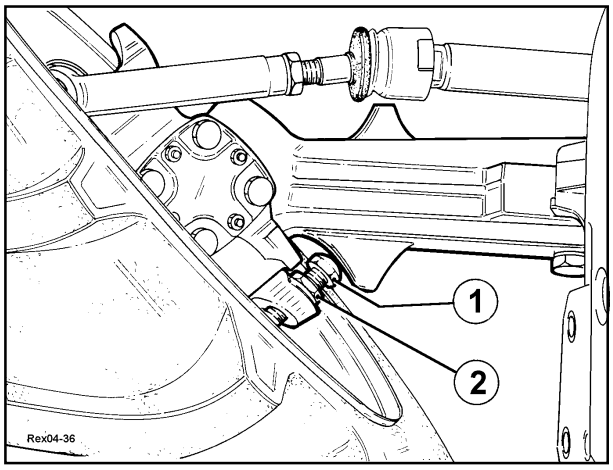


Fig.4-36 - Adjusting the steering angle.
1 - Adjuster screw.
2 - Check nut.

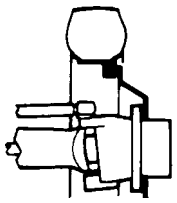
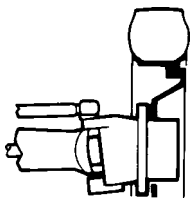
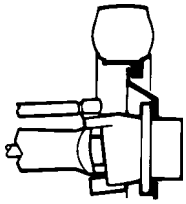
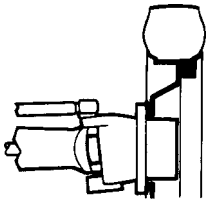
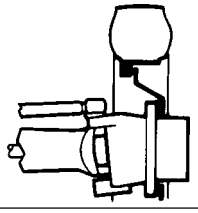
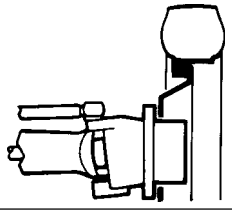
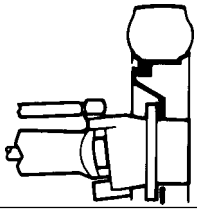
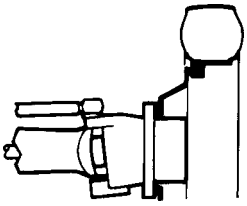
Wheel disc pointing inwards		Wheel disc pointing outwards	
A		E	
B		F	
C		G	
D		H	

Fig.4-37 - Front wheel tracks for 4WD tractors.

4WD axle - Adjusting wheel track

The front track on 4WD tractors can be adjusted by changing the position of the hubs and central wheel discs as shown in the table below (Fig. 4-39).

1 - Prescribed torque wrench setting for M16 wheel nuts (1 - Fig.4-38): 120-145 Nm.

2 - Rim to disk 210-230 Nm (2 - Fig.4-38).

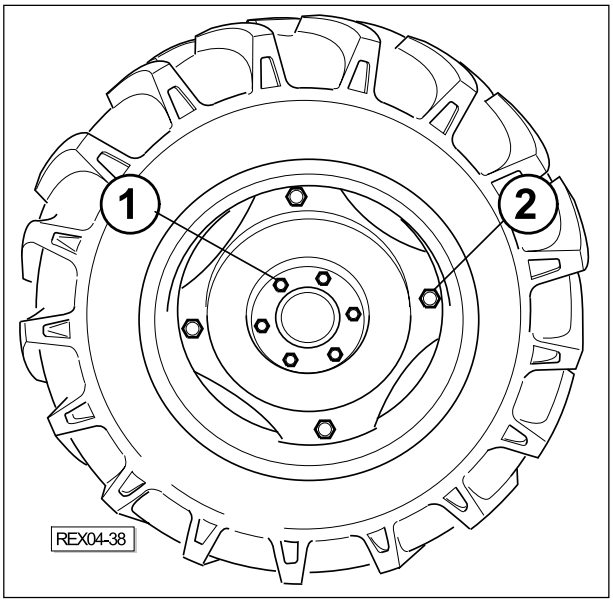


Fig.4-38 - Front track adjustment for 4WD tractor

WHEEL TRACKS FOR 4WD FRONT AXLE - See Fig.4-37

Mod. 60GE-70GE-80GE Interflange 1282 mm Axle 1294 mm.

Rim	5.50 F - 16			5.50 F - 16			W7x16		
Tyre	6.50 R16			7.50 R16			9.0/75 - 16		
Position	Track	Inner	Outer	Track	Inner	Outer	Track	Inner	Outer
A	1132	966	1298	1132	941	1323	1155	925	1385
B	1208	1042	1374	1208	1017	1399	1235	1005	1465
C	1212	1046	1378	1212	1021	1403	1239	1009	1469
D	1288	1122	1454	1288	1097	1479	1259	1029	1489
E				1292	1101	1483	1319	1089	1549
F				1368	1177	1559	1339	1109	1569
G				1372	1181	1563	1343	1113	1573
H				1448	1257	1639	1423	1193	1653

Rim	W7 - 16			5.50 F - 16			W7x16		
Tyre	280/70 R16			8.25 - 16			260/70 R16		
Position	Track	Inner	Outer	Track	Inner	Outer	Track	Inner	Outer
A	1155	875	1435	1132	922	1342	1155	875	1415
B	1235	955	1515	1208	998	1418	1235	955	1495
C	1239	959	1519	1212	1002	1422	1239	959	1499
D	1259	979	1539	1288	1078	1498	1259	979	1519
E	1319	1039	1599	1292	1082	1502	1319	1039	1579
F	1339	1059	1619	1368	1158	1578	1339	1059	1599
G	1343	1063	1623	1372	1162	1582	1343	1063	1603
H	1423	1143	1703	1448	1238	1658	1423	1143	1683

Mod. 75GE-85GE-95GE-105GE Interflange 1282 mm Axle 1294 mm

Rim	W7 - 16			5.50 F - 16			W7x16			W7X16		
Tyre	280/70 R16			8.25 - 16			260/70 R16			9.0/75 - 16		
Position	Track	Inner	Outer	Track	Inner	Outer	Track	Inner	Outer	Track	Inner	Outer
A	1155	875	1435	1132	922	1342	1155	875	1415	1155	925	1385
B	1235	955	1515	1208	998	1418	1235	955	1495	1235	1005	1465
C	1239	959	1519	1212	1002	1422	1239	959	1499	1239	1009	1469
D	1259	979	1539	1288	1078	1498	1259	979	1519	1259	1029	1489
E	1319	1039	1599	1292	1082	1502	1319	1039	1579			
F	1339	1059	1619	1368	1158	1578	1339	1059	1599			
G	1343	1063	1623	1372	1162	1582	1343	1063	1603			
H	1423	1143	1703	1448	1238	1658	1423	1143	1683			

WHEEL TRACKS FOR 4WD FRONT AXLE - See Fig.4-37

Mod. 60F-70F-80F Interflange 1282 mm Axle 1294 mm

Rim	5.50 F - 16			5.50 F - 16			9x18			5.50 F - 18			5.50 F - 16		
Tyre	8.25 - 16			7.50 R16			280/70 R18			7.50 R18			6.50 - 16		
Position	Track	Inner	Outer	Track	Inner	Outer	Track	Inner	Outer	Track	Inner	Outer	Track	Inner	Outer
A	1132	922	1342	1132	941	1323	1112	832	1392	1128	937	1319	1132	966	1298
B	1208	998	1418	1208	1017	1399	1162	882	1442	1162	971	1353	1208	1042	1374
C	1212	1002	1422	1212	1021	1403	1218	938	1498	1218	1027	1409	1212	1046	1378
D	1288	1078	1498	1288	1097	1479	1268	988	1548	1252	1061	1443	1288	1122	1454
E	1292	1082	1502	1292	1101	1483	1312	1032	1592	1328	1137	1519	1292	1126	1458
F	1368	1158	1578	1368	1177	1559	1362	1082	1642	1362	1171	1553	1368	1202	1534
G	1372	1162	1582	1372	1181	1563	1418	1138	1698	1418	1227	1609	1372	1206	1538
H	1448	1238	1658	1448	1257	1639	1468	1188	1748	1452	1261	1643	1448	1282	1614

Rim	W7 - 16			W8-20			5.50 F - 20		
Tyre	280/70 R16			280/70 R20			7.50 R20		
Position	Track	Inner	Outer	Track	Inner	Outer	Track	Inner	Outer
A	1155	875	1435	1018	738	1298	1132	941	1323
B	1235	955	1515	1108	828	1388	1206	1015	1397
C	1239	959	1519	1212	932	1492	1222	1041	1413
D	1259	979	1539	1278	998	1558	1284	1093	1475
E	1319	1039	1599	1302	1022	1582	1296	1105	1487
F	1339	1059	1619	1368	1088	1648	1358	1167	1549
G	1343	1063	1623	1472	1192	1752	1374	1183	1565
H	1423	1143	1703	1562	1282	1842	1448	1257	1639

Mod. 75F-85F-95F-105F Interflange 1282 mm Axle 1294 mm

Rim	W7 - 16			5.50 F - 16			5.50 F - 18			9x18		
Tyre	280/70 R16			8.25 - 16			7.50 R18			280/70 R18		
Position	Track	Inner	Outer	Track	Inner	Outer	Track	Inner	Outer	Track	Inner	Outer
A	1155	875	1435	1132	922	1342	1128	937	1319	1112	832	1392
B	1235	955	1515	1208	998	1418	1162	971	1353	1162	882	1442
C	1239	959	1519	1212	1002	1422	1218	1027	1409	1218	938	1498
D	1259	979	1539	1288	1078	1498	1252	1061	1443	1268	988	1548
E	1319	1039	1599	1292	1082	1502	1328	1137	1519	1312	1032	1592
F	1339	1059	1619	1368	1158	1578	1362	1171	1553	1362	1082	1642
G	1343	1063	1623	1372	1162	1582	1418	1227	1609	1418	1138	1698
H	1423	1143	1703	1448	1238	1658	1452	1261	1643	1468	1188	1748

Rim	W8-20			W8-20		
Tyre	300/70 R20			9.5 R20		
Position	Track	Inner	Outer	Track	Inner	Outer
A	1018	718	1318	1018	776	1260
B	1108	808	1408	1108	866	1350
C	1212	912	1512	1212	970	1454
D	1278	978	1578	1278	1036	1520
E	1302	1002	1602	1302	1060	1544
F	1368	1068	1668	1368	1126	1610
G	1472	1172	1772	1472	1230	1714
H	1562	1262	1862	1562	1320	1804

Rim	W8-20			5.50 F - 20			W8-20		
Tyre	280/70 R20			7.50 R20			275/80 R20		
Position	Track	Inner	Outer	Track	Inner	Outer	Track	Inner	Outer
A	1018	738	1298	1132	941	1323	1018	743	1293
B	1108	828	1388	1206	1015	1397	1108	833	1383
C	1212	932	1492	1222	1041	1413	1212	937	1487
D	1278	998	1558	1284	1093	1475	1278	1003	1553
E	1302	1022	1582	1296	1105	1487	1302	1027	1577
F	1368	1088	1648	1358	1167	1549	1368	1093	1643
G	1472	1192	1752	1374	1183	1565	1472	1197	1747
H	1562	1282	1842	1448	1257	1639	1562	1287	1837

CARREGGIATE PER ASSALE ANTERIORE 4WD - Vedi Fig.4-37

Mod. 75XL-85XL-95XL-105XL Interflange 1442 mm. Axle 1454 mm.

Rim	5.50 F - 16			9x18			9x18			W8 - 20		
Tyre	8.25 - 16			280/70 R18			275/80 R18			300/70 R20		
Position	Track	Inner	Outer	Track	Inner	Outer	Track	Inner	Outer	Track	Inner	Outer
A	1292	1082	1502	1272	992	1552	1272	997	1547	1178	878	1478
B	1368	1158	1578	1322	1042	1602	1322	1047	1597	1268	968	1568
C	1372	1162	1582	1378	1098	1658	1378	1103	1653	1372	1072	1672
D	1448	1238	1658	1428	1148	1708	1428	1153	1703	1438	1138	1738
E	1452	1242	1662	1472	1192	1752	1472	1197	1747	1462	1162	1762
F	1528	1318	1738	1522	1242	1802	1522	1247	1797	1528	1228	1828
G	1532	1322	1742	1578	1298	1858	1578	1303	1853	1632	1332	1932
H	1608	1398	1918	1628	1348	1908	1628	1353	1903	1722	1422	2022

Rim	5.50 F - 20			W8x20			W8x20		
Tyre	7.50 R20			9.50 R20			275/80 R20		
Position	Track	Inner	Outer	Track	Inner	Outer	Track	Inner	Outer
A	1292	1101	1483	1178	936	1420	1178	903	1453
B	1366	1175	1557	1268	1026	1510	1268	993	1543
C	1382	1191	1573	1372	1130	1614	1372	1097	1647
D	1444	1253	1635	1438	1196	1680	1438	1163	1713
E	1456	1265	1647	1462	1220	1704	1462	1187	1737
F	1518	1327	1709	1528	1286	1770	1528	1253	1803
G	1534	1343	1725	1632	1390	1874	1632	1357	1907
H	1608	1417	1799	1722	1480	1964	1722	1447	1997

Rim	W8-20			5.50 F - 18			W7x16			9x18		
Tyre	280/70 R20			7.50 R18			280/70 R16			10.5/80 R 18		
Position	Track	Inner	Outer	Track	Inner	Outer	Track	Inner	Outer	Track	Inner	Outer
A	1178	898	1458	1288	1097	1479	1315	1035	1595	1272	1005	1539
B	1268	988	1548	1322	1131	1513	1395	1115	1675	1322	1055	1589
C	1372	1092	1652	1378	1187	1569	1399	1119	1679	1378	1111	1645
D	1438	1158	1718	1412	1221	1603	1419	1139	1699	1428	1161	1695
E	1462	1182	1742	1488	1297	1679	1479	1199	1759	1472	1205	1739
F	1528	1248	1808	1522	1331	1713	1499	1219	1779	1522	1255	1789
G	1632	1352	1912	1578	1387	1769	1503	1223	1783	1578	1311	1845
H	1722	1442	2002	1612	1421	1803	1583	1303	1863	1628	1361	1895

Rear track width adjustment

The rear track width can be adjusted by changing the position of the rim fixing points or the central wheel discs, as shown in the table below.

Torque the nuts and bolts (1 - Fig. 4-39) that fix the rim to the disc to 205-245 Nm and those (2) that fix the disc to the wheel hub to 340-420 Nm. Always check tyre pressure.

Certain track widths cannot be obtained with some tyre types (see table Fig. 4-40).

***WARNING:** When jacking up the tractor, pay attention that its weight is correctly distributed and securely wedge the wheels on the ground. Tighten all nuts and bolts to the required torque.*

***WARNING:** Rear wheels are very heavy. Always use a hoist or other suitable lifting equipment to handle, mount and dismount wheels.*

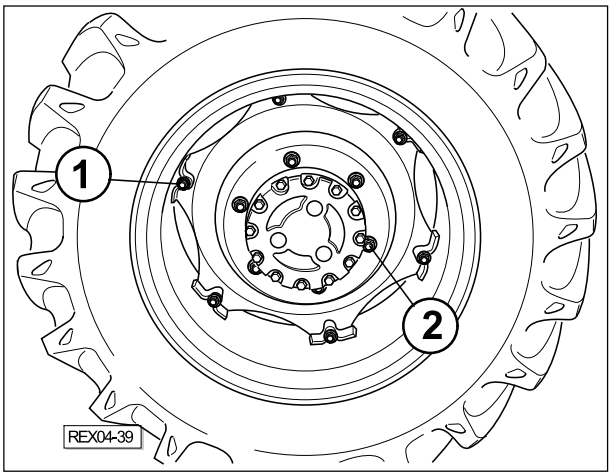


Fig.4-39

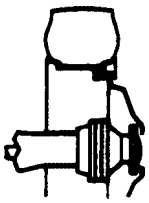
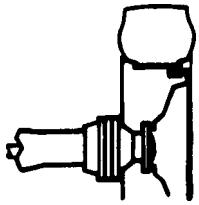
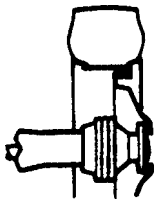
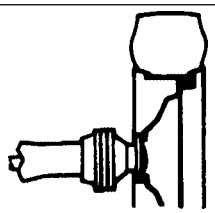
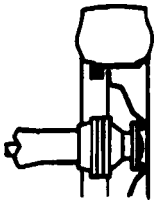
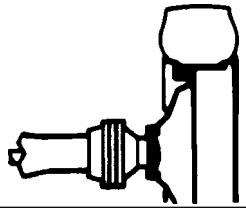
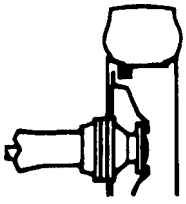
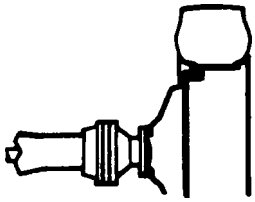
Adjusting rear track widths - Rim and disc position			
Wheel disc pointing inwards		Wheel disc pointing outwards	
A		E	
B		F	
C		G	
D		H	

Fig.4-40 - Rear track widths

WHEEL TRACKS - See Fig.4-40

Mod. 60GE-70GE-80GE Interflange 1129 mm

Rim	W11-20			W10-24			W11-20			W12-24			W10-24		
Tyre	375/75 R20			320/70 R24			14.9 LR20			360/70 R24			360/70 R24		
Position	Track	Inner	Outer	Track	Inner	Outer	Track	Inner	Outer	Track	Inner	Outer	Track	Inner	Outer
A	983	608	1358	-	-	-	983	603	1363	-	-	-	-	-	-
B	1077	702	1452	995	675	1315	1077	697	1457	982	622	1342	995	635	1355
C	1201	826	1576	1050	730	1370	1201	821	1581	1037	677	1397	1050	690	1410
D	1295	920	1670	1115	795	1435	1295	915	1675	1128	768	1488	1115	755	1475
E				1163	843	1483	1129	749	1509	1150	790	1510	1163	803	1523
F				1228	908	1548				1241	881	1601	1228	868	1588
G				1283	963	1603				1296	936	1656	1283	923	1643
H				1396	1076	1716				1409	1049	1769	1396	1036	1756

Mod. 75GE-85GE-95GE-105GE Interflange 1129 mm.

Rim	W12-24			W10-24			W11-20			W11-20		
Tyre	360/70 R24			360/70 R24			14.9 LR20			375/75 R20		
Position	Track	Inner	Outer	Track	Inner	Outer	Track	Inner	Outer	Track	Inner	Outer
A	-	-	-	-	-	-	983	603	1363	983	608	1358
B	982	622	1342	995	635	1355	1077	697	1457	1077	702	1452
C	1037	677	1397	1050	690	1410	1201	821	1581	1201	826	1576
D	1128	768	1488	1115	755	1475	1295	915	1675	1295	920	1670
E	1150	790	1510	1163	803	1523						
F	1241	881	1601	1228	868	1588						
G	1296	936	1656	1283	923	1643						
H	1409	1049	1769	1396	1036	1756						

Mod. 60F-70F-80F Interflange 1129 mm.

Rim	W12-24			W12-24			W12-28			W10-24		
Tyre	13.6 R24			360/70 R24			360/70 R28			12.4 R24		
Position	Track	Inner	Outer	Track	Inner	Outer	Track	Inner	Outer	Track	Inner	Outer
A	-	-	-	-	-	-	-	-	-	-	-	-
B	982	636	1328	982	622	1342	981	621	1341	995	680	1310
C	1037	691	1383	1037	677	1397	995	635	1355	1050	735	1365
D	1128	782	1474	1128	768	1488	1106	746	1466	1115	800	1430
E	1150	804	1496	1150	790	1510	1170	810	1530	1163	848	1478
F	1241	895	1587	1241	881	1601	1281	921	1641	1228	913	1543
G	1296	950	1642	1296	936	1656	1295	935	1655	1283	968	1598
H	1409	1063	1755	1409	1049	1769	1406	1046	1766	1396	1081	1711

Rim	W12-28			W10-28			W10-24			W10-24		
Tyre	12.4 R28			11.2 R28			320/70 R24			11.2 R24		
Position	Track	Inner	Outer	Track	Inner	Outer	Track	Inner	Outer	Track	Inner	Outer
A	-	-	-	-	-	-	-	-	-	-	-	
B	981	666	1296	981	696	1266	995	675	1315	995	710	1280
C	995	680	1310	995	710	1280	1050	730	1370	1050	765	1335
D	1106	791	1421	1106	821	1391	1115	795	1435	1115	830	1400
E	1170	855	1485	1170	885	1455	1163	843	1483	1163	878	1448
F	1281	966	1596	1281	996	1566	1228	908	1548	1228	943	1513
G	1295	980	1610	1295	1010	1580	1283	963	1603	1283	998	1568
H	1406	1091	1721	1406	1121	1691	1396	1076	1716	1396	1111	1681

Mod. 60F-70F-80F Interflange 1129 mm.

Rim	W12-28			W12-24			W12-28			W12-24		
Tyre	380/70 R 28			14.9 R24			13.6 R28			380/70 R24		
Position	Track	Inner	Outer	Track	Inner	Outer	Track	Inner	Outer	Track	Inner	Outer
A	-	-	-	-	-	-	-	-	-	-	-	-
B	981	601	1361	982	602	1362	981	635	1327	982	602	1362
C	995	615	1375	1037	657	1417	995	649	1341	1037	757	1417
D	1106	726	1486	1128	748	1508	1106	760	1452	1128	748	1508
E	1170	790	1550	1150	770	1530	1170	824	1516	1150	770	1530
F	1281	901	1661	1241	861	1621	1281	935	1627	1241	861	1621
G	1295	915	1675	1296	916	1676	1295	949	1641	1296	916	1676
H	1406	1026	1786	1409	1029	1789	1406	1060	1752	1409	1029	1789

WHEEL TRACKS - See Fig.4-40

Mod. 75F-85F-95F-105F Interflange 1129 mm.

Rim	W12-24			W12-24			W12-24		
Tyre	380/70 R24			13.6 R24			14.9 R24		
Position	Track	Inner	Outer	Track	Inner	Outer	Track	Inner	Outer
A	-	-	-	-	-	-	-	-	
B	982	602	1362	982	636	1328	982	602	1362
C	1037	657	1417	1037	691	1383	1037	657	1417
D	1128	748	1508	1128	782	1474	1128	748	1508
E	1150	770	1530	1150	804	1496	1150	770	1530
F	1241	861	1621	1241	895	1587	1241	861	1621
G	1296	916	1676	1296	950	1642	1296	916	1676
H	1409	1029	1789	1409	1063	1755	1409	1029	1789

Rim	W12-28			W12-28			W12-28			W12-28		
Tyre	14.9 R28			13.6 R28			360/70 R28			380/70 R28		
Position	Track	Inner	Outer	Track	Inner	Outer	Track	Inner	Outer	Track	Inner	Outer
A	-	-	-	-	-	-	-	-	-	-	-	-
B	981	601	1361	981	635	1327	981	621	1341	981	601	1361
C	995	615	1375	995	649	1341	995	635	1355	995	615	1375
D	1106	726	1486	1106	760	1452	1106	746	1466	1106	726	1486
E	1170	790	1550	1170	824	1516	1170	810	1530	1170	790	1550
F	1281	901	1661	1281	935	1627	1281	921	1641	1281	901	1661
G	1295	915	1675	1295	949	1641	1295	935	1655	1295	915	1675
H	1406	1026	1786	1406	1060	1752	1406	1046	1766	1406	1026	1786

WHEEL TRACKS - See Fig.4-40

Mod. 75XL-85XL-95XL-105XL **Interflange 1295 mm.**

Rim	W12-24			W12-24			W13-24			W13-24			W12-28		
Tyre	13.6 R24			14.9 R24			16.9 R24			420/70 R24			14.9 R28		
Position	Track	Inner	Outer	Track	Inner	Outer	Track	Inner	Outer	Track	Inner	Outer	Track	Inner	Outer
A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B	1148	802	1494	1148	768	1528	1148	718	1578	1148	728	1568	1147	767	1527
C	1203	857	1549	1203	823	1583	1203	773	1633	1203	783	1623	1161	781	1541
D	1294	948	1640	1294	914	1674	1294	864	1724	1294	874	1714	1272	892	1652
E	1316	970	1662	1316	936	1696	1316	886	1746	1316	896	1736	1336	956	1716
F	1407	1061	1753	1407	1027	1787	1407	977	1837	1407	987	1827	1447	1067	1827
G	1462	1116	1808	1462	1082	1842	1462	1032	1892	1462	1042	1882	1461	1081	1841
H	1575	1229	1921	1575	1195	1955	1575	1145	2005	1575	1155	1995	1572	1192	1952

Rim	W12-28			W12-28			W14L-28			W12-28		
Tyre	13.6 R28			380/70 R28			420/70 R28			360/70 R28		
Position	Track	Inner	Outer	Track	Inner	Outer	Track	Inner	Outer	Track	Inner	Outer
A	-	-	-	-	-	-	-	-	-	-	-	-
B	1147	801	1493	1147	767	1527	1147	727	1567	1147	787	1507
C	1161	815	1507	1161	781	1541	1161	741	1581	1161	801	1521
D	1272	926	1618	1272	892	1652	1272	852	1692	1272	912	1632
E	1336	990	1682	1336	956	1716	1336	916	1756	1336	976	1696
F	1447	1101	1793	1447	1067	1827	1447	1027	1867	1447	1087	1807
G	1461	1115	1807	1461	1081	1841	1461	1041	1881	1461	1101	1821
H	1572	1226	1918	1572	1192	1952	1572	1152	1992	1572	1212	1932

Rim	W12-24			W12-24			W13-24		
Tyre	420/65 R24			380/70 R24			440/65 R24		
Position	Track	Inner	Outer	Track	Inner	Outer	Track	Inner	Outer
A	-	-	-	-	-	-	-	-	
B	1148	728	1568	1148	768	1528	1148	708	1588
C	1203	783	1623	1203	823	1583	1203	763	1643
D	1294	874	1714	1294	914	1674	1294	854	1734
E	1316	896	1736	1316	936	1696	1316	876	1756
F	1407	987	1827	1407	1027	1787	1407	967	1847
G	1462	1042	1882	1462	1082	1842	1462	1022	1902
H	1575	1155	1995	1575	1195	1955	1575	1135	2015

Wheels and tyres

Regularly check that the front and rear wheel nuts are fully tightened.

Tyre pressure must be checked and adjusted before using the tractor. Make further checks at regular intervals.

NOTE: *Tractors are supplied by the manufacturer with tyres inflated at higher pressures then recommended. The pressure should be adjusted afterwards by the user according to values given in the tables of tyre manufacturers and to the use anticipated for the tractor.*

If these simple rules are carefully followed, they will ensure maximum working life for your tyres.

If you notice any cuts in the tread or side walls, have them vulcanized immediately to avoid further damage to the tyre.

Drive slowly on roads if the pressure in the tyres has been reduced for use on soft earth.

To obtain maximum efficiency, do not use tyres with more than 30-50% wear.

NOTE: *If the tractor is not going to be used for a long period of time, support it on raised blocks to remove the load from the tyres.*

NOTE: *Avoid parking the tractor on floors which are covered with oil or diesel fuel. Also avoid parking the tractor where the tyres are permanently exposed to direct sunlight, especially if the tractor is not going to be used for some time.*

***WARNING:** When jacking up the tractor, pay attention that its weight is correctly distributed and securely wedge the wheels on the ground. Tighten all nuts and bolts to the required torque.*

***WARNING:** Always use a hoist or other suitable lifting equipment to handle, mount and dismount wheels.*

Tyres

The following is a list of tyre types and front/rear combinations. Please ask your Dealer for information on further combinations.
On tractors with 40 Kph overdrive gearbox only tures marked as «load index A8» may be used.

NOTE: *Tractors are supplied by the manufacturer with tyres inflated at higher pressures then recommended. The pressure should be adjusted afterwards by the user according to values given in the tables of tyre manufacturers and to the use anticipated for the tractor.*

Tyre table for 2WD tractors - If available

Model		Front tyres		Rear tyres	
		Tyre	Rim	Tyre	Rim
60 GE	2 WD	9.00-10 9.00-10 5.00-15 6.00-16	5.50F10 5.50F10 3.00D15 4.00E16	14.9LR20 375/75R20 320/70R24 360/70R24	W 11x20 W11x20 W 10x24 W 12x24
70-80 GE 75-85-95-105 GE	2 WD	9.00-10 6.00-16 9.00-10 7.50-10	5.50F10 4.00E16 5.50F10 5.50F10	14.9LR20 360/70R24 375/75R20 375/75R20	W 11x20 W 12x24 W 11x20 W 11x20
60 F	2 WD	5.00-15 6.00-16 6.00-16 5.00-15 6.00-16 7.50-16	3.00D15 4.00E16 4.00E16 3.00D15 4.00E16 5.50F16	12.4/11-24 13.6/12-24 360/70-24 11.2/10-24 11.2/10-28 12.4/11-28	W 10X24 W 12X24 W 12x24 W 12x24 W 10x28 W 10x23
70 - 75 F - GT	2 WD	7.5L-15 6.00-16 7.50-16 7.50-16 6.50-16 6.00-16 6.50-16	6.00 15 4.00E16 5.50F16 5.50F16 4.00E16 4.00E16 4.00E16	14.9R24 13.6R24 16.9R24 13.6R28 420/70R24 380/70R24 360/70R28	W 12x24 W 12x24 W 13x24 W 12x28 W 13x24 W 12x24 W 12x28
80 - 85 F - XL	2 WD	7.50-16 7.5L-15 7.50-16 — 6.00-16 6.50-16	5.50F16 6x15 5.50F16 — 4.00E16 4.00E16	14.9R28 14.9R24 13.6R28 16.9R24 380/70R24 420/70R24	W 12x28 W 12x24 W 12x28 W 13x24 W 13x24 W 13x24
95 - 105 F - XL	2 WD	7.50-16 7.50-16 6.50-16 7.50-16 7.50-16 7.50-16 7.50-16	5.50F16 5.50F16 4.00E16 5.50F16 5.50F16 5.50F16 5.50F16	14.9R28 420/70R28 420/70R24 380/70R28 14.9R28 16.9R24 480/70R24	W 12x28 W 14Lx28 W 13x24 W 12x28 W 12x28 W 13x24 W 14Lx24

Tyre table for 4WD tractors

Model		Front tyres			Rear tyres		
		Tyre	Rim	R index	Tyre	Rim	R index
60 GE	4 WD	7,50 R16	5,50 F-16	375	320/70 R24	W 10x24	515
		6,50 R16	5,50 F-16	360	375/75 R20	W 11x20	515
		9,0/75 - 16	W 7x16	360	14,9 LR20	W 11x20	510
		260/70 R16	W 7x16	360	375/75 R20	W 11x20	515
70-80 GE	4 WD	8,25 - 16	5,50 F-16	380	360/70 R24	W 10x24	540
		280/70 R16	W 7x16	375	360/70 R24	W 12x24	540
		9,0/75 - 16	W 7x16	360	14,9 LR 20	W 11x20	510
		280/70 R16	W 7x16	375	280/70R24	W 12x24	560
		260/70 R16	W 7x16	360	375/75 R 20	W 11x20	515
75-85 GE	4 WD	8,25 - 16	5,50 F-16	380	360/70 R24	W 10x24	540
		280/70 R16	W 7x16	375	360/70 R24	W 12x24	540
		9,0/75 - 16	W 7x16	360	14,9 LR 20	W 11x20	510
		260/70 R16	W 7x16	375	14,9 LR 20	W 11x20	510
		260/70 R16	W 7x16	360	375/75 R 20	W 11x20	515
95-105 GE	4 WD	8,25 - 16	5,50 F-16	380	360/70 R24	W 10x24	540
		280/70 R16	W 7x16	375	360/70 R24	W 12x24	540
		9,0/75 - 16	W 7x16	360	14,9 LR 20	W 11x20	510
		260/70 R16	W 7x16	375	14,9 LR 20	W 11x20	510
		260/70 R16	W 7x16	360	375/75 R 20	W 11x20	515

Model		Front tyres			Rear tyres		
		Tyre	Rim	R index	Tyre	Rim	R index
60 F	4 WD	7,50 R18	5.50 F-18	400	12,4 R28	W 10-28	590
		280/70 R18	9x18	400	360/70 R28	W 12-28	590
		8,25 - 16	5,50 F-16	380	11,2 R28	W 10-28	565
		8,25 - 16	5,50 F-16	380	13,6 R24	W 12-24	560
		7,50 R16	5,50 F-16	375	12,4 R24	W 10-24	540
		7,50 R16	5,50 F-16	375	360/70 R24	W 12-24	540
		6,50 R16	5,50 F-16	360	11,2 R24	W 10-24	515
		6,50 - 16	5,50 F-16	360	320/70 R24	W 10-24	515
70 - 80 F	4 WD	280/70 R20	W 8x20	430	380/70 R28	W 12-28	610
		7,50 R20	5,50 F-20	430	13,6 R28	W 12-28	610
		7,50 R18	5.50 F-18	400	12,4 R28	W 10-28	590
		7,50 R18	5.50 F-18	400	14,9 R24	W 12-24	590
		280/70 R18	9 x 18	400	14,9 R24	W 12-24	590
		280/70 R18	9 x 18	400	360/70 R28	W 12-28	590
		8,25 - 16	5.50 F-16	380	13,6 R24	W 12-24	560
75 - 85 F	4 WD	300/70 R20	W 8x20	445	14,9 R28	W 12-28	640
		9,5 R20	W 8x20	445	14,9 R28	W 12-28	640
		280/70 R20	W 8x20	430	14,9 R28	W 12-28	640
		275/80 R20	W 8x20	445	14,9 R28	W 12-28	640
		10,5/80 - 18	9 x 18	-	16,9 R24	W 13-24	620
		7,50 R20	5,50 F-20	430	13,6 R28	W 12-28	610
		260/70 R18	9 x 18	400	380/70 R28	W 13-28	610
		7,50 R18	5.50 F-18	400	14,9 R24	W 12-24	590
		280/70 R18	9 x 18	400	14,9 R24	W 12-24	590
		280/70 R18	9 x 18	400	360/70 R28	W 12-28	590
		260/70 R18	9 x 18	400	360/70 R28	W 12-28	590
		260/70 R18	9 x 18	400	420/70 R24	W 13-24	590
		8,25 - 16	5.50 F-16	380	13,6 R24	W 12-24	560
		280/70 R16	W 7x16	375	380/70 R24	W 12-24	560

Model		Front tyres			Rear tyres		
		Tyre	Rim	R index	Tyre	Rim	R index
95-105 F	4 WD	300/70 R20	W 8x20	445	14,9 R28	W 12-28	640
		9,5 R20	W 8x20	445	14,9 R28	W 12-28	640
		280/70 R20	W 8x20	430	380/70 R28	W 12-28	640
		275/80 R20	W 8x20	445	14,9 R28	W 12-28	640
		7,50 R20	5,50 F-20	430	13,6 R28	W 12-28	610
		7,50 R18	5.50 F-18	400	14,9 R24	W 12-24	590
		280/70 R18	9 x 18	400	14,9 R24	W 12-24	590
		280/70 R18	9 x 18	400	360/70 R28	W 12-28	590
		8,25 - 16	5.50 F-16	380	13,6 R24	W 12-24	560
		300/65 R 18 *	9x18	-	440/65 R 24*	W 13-24	-

*** Pressure 1,4 bar**

Model		Front tyres			Rear tyres		
		Tyre	Rim	R index	Tyre	Rim	R index
75-85 XL	4 WD	300/70 R20	W 8x20	445	14,9 R28	W 12-28	640
		9,5 R20	W 8x20	445	14,9 R28	W 12-28	640
		275/80 R20	W 8x20	445	14,9 R28	W 12-28	640
		280/70 R20	W8 x 20	430	14,9 R28	W 12-28	640
		300/70 R20	W 8x20	445	420/70 R28	W 14L-28	640
		10.5/80 R18	9 x 18	425	16,9 R24	W 13-24	620
		275/80 R18	9 x 18	425	16,9 R24	W 13-24	620
		7,50 R20	5.50 F-20	425	13,6 R28	W 12-28	610
		280/70 R20	W8 x 20	430	380/70 R28	W 12-28	610
		280/70 R18	9 x 18	400	14,9 R24	W 12-24	590
		280/70 R18	9 x 18	400	360/70 R28	W 12-28	590
		280/70 R18	9 x 18	390	420/70 R24	W 13-24	590
		8,25 - 16	5.50 F-16	380	13,6 R24	W 12-24	560
		7,50 R18	5.50 F-18	400	14,9 R24	W 12-24	590
95-105 XL	4 WD	300/70 R20	W 8x20	445	14,9 R28	W 12-28	640
		9,5 R20	W 8x20	445	14,9 R28	W 12-28	640
		275/80 R20	W 8x20	445	14,9 R28	W 12-28	640
		280/70 R20	W8 x 20	430	14,9 R28	W 12-28	640
		300/70 R20	W 8x20	445	420/70 R28	W 14L-28	640
		275/80 R18	9 x 18	425	16,9 R24	W 13-24	620
		280/70 R18	9 x 18	400	14,9 R24	W 12-24	590
		280/70 R18	9 x 18	400	360/70 R28	W 12-28	590
		280/70 R18	9 x 18	390	420/70 R24	W 13-24	590
		8,25 - 16	5.50 F-16	380	13,6 R24	W 12-24	560
		10,5/80 R18	9 x 18	425	16,9 R24	W 13-24	620
		7,50 R20	5,50 F-20	425	13,6 R28	W 12-28	610
		7,50 R18	5,50 F-18	400	14,9 R24	W 12-24	590
		280/70 R20	W8 x 20	430	380/70 R28	W 12-28	610
		300/65 R 18*	9x18	-	440/65 R 24*	W 13-24	-

*** Pressure 1,4 bar**

Ballast

When the tyre is not sufficiently loaded in relation to the traction the tractor must produce during work, it may easily slip, causing loss of speed and wear on the tread plus reduced efficiency on the job. To get the most out of tractor power, it is therefore advisable to ballast the tractor by applying cast iron rings to the driving wheels or by filling the tyres with water.

Ballasting the front axle

If heavy implements that might destabilize the tractor are hitched to the lift, cast iron plates can be added to the front end to counterbalance their weight (Fig. 4-41).

The plates have handles so that they can be mounted and demounted more easily.
They should be applied to the radiator core support and fixed with the relative rods.

Combinations:
6 cast iron plates, 36 kg each = 216 kg

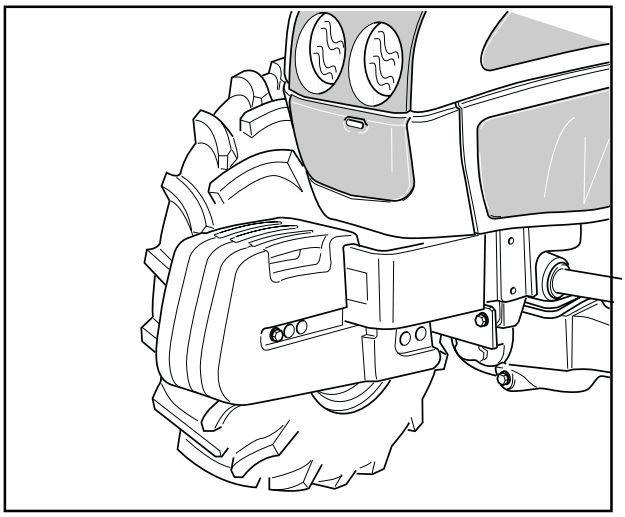


Fig.4-41

***WARNING:** Manual lifting of the ballast is a potentially dangerous operation.*

Ballasting the rear wheels

Two or three cast iron rings can be applied to each wheel, see Fig. 4-42. The first is fixed straight on to the wheel while the second is fixed to the first ring and the third to the second.

The total weight that can be applied is therefore:
4 rings (2+2) each weghing 45 kg: total 180 kg.

***WARNING:** Always lift the rear ballast by a hook or similar device.*

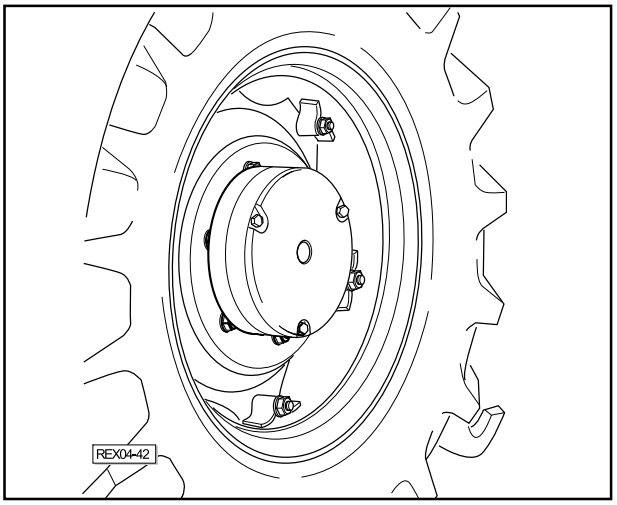


Fig.4-42 - Ballasting the rear wheels.
Max. 2 rings for each wheel.

IMPORTANT:
- *Do not ballast the tractor over its rated carrying weight.*
- *When using the tractor for light work, transport and on-road towing, remove the ballast to avoid unnecessary strain on the mechanical components.*
- *With semi-mounted and fully mounted implements (which inevitably increase the load on the rear axle of the tractor), ballast must only be used when strictly necessary. There is no point in increasing grip beyond the level necessary for efficient work as this will reduce tyre life.*
- *Carefully check the tyre inflation pressure since this will make the tyre last longer and ensure a wear more evenly regular use.*
- *The softer the soil, the lower tyre inflation must be, while the tyre should be inflated to a greater extent as the soil becomes more compact.*

Ballasting with water

The tractor can also be ballasted by filling the tyres with water.

To lower the freezing point a few degrees in winter, add calcium chloride to the water in compliance with the proportions given in the following table. The ballast should evidently be removed when the job does not require excessive draft, otherwise the soil could become excessively compressed.

The following table gives approximate values for the liters of water and kilos of calcium chloride required to prepare the antifreeze solution used to three-quarters (75%) fill each tyre.

In relation to ballasting with cast iron rings on the driving wheels, this type of weighting offers the following advantages:

- Low cost.
- Easy preparation.
- Improved steering.
- The weight of the driving wheels can be regulated according to the real requirements.

***CAUTION**: Ballasting with water and calcium chloride antifreeze solution can increase corrosion of the components that come into contact with the mixture.*

Fig.4-43 TYRE CAPACITIES FOR BALLASTING WITH WATER

Tyre size	Capacity to valve level (75%) with water only Kgs (litres)	Ballasting with antifreeze solution for temperatures over – 20° C.		
		Water Kgs (litres) for antifreeze solution	Commercial sodium chloride 70 to 72% Kgs	Weight of the solution Kgs
12.4 - 28	103	89	26	115
13.6 - 24	120	103	30	133
13.6 - 28	120	103	30	133
360/70 - 28	122	108	32	140
380/70 - 24	130	116	35	151
14.9 - 24	148	128	38	166
14.9 - 28	164	141	42	183
420/70 - 24	166	149	44	193
16.9 - 24	210	187	57	244
480/70 - 24	213	189	58	247

NOTE: This table contains only indicative data. The operator should ballast wheels with water on the base of the tables issued by the tyre manufacturer and according to the use anticipated for the tractor.

How to fill the tyres with water

WARNING: when you prepare a solution of calcium chloride to ballast the tyres, NEVER EVER pour the water on to the calcium chloride since this could lead to a violent reaction. This danger can be avoided by adding the calcium chloride very slowly to the water and stirring until it has completely dissolved.

Jack up the wheel and position it with the valve right at the top (Fig. 4-44).
Unscrew the movable union of the valve and wait until the tyre deflates.
Tighten the relative fitting (3 - Fig. 4-44) into the valve housing (1) and apply the tube (2). Air will escape from the little tube (4) as the tyre is filled with water.

The tyres are filled to the three-quarter mark when water escapes from the small tube (4) if this is positioned completely downwards.

To add less water, i.e. obtain a lower weight, turn the wheel so that the valve is in a more downward position.

Tighten the union on the valve casing again and inflate the tyre with air until obtaining the prescribed pressure.

Take the following precautions when preparing the water-calcium chloride mixture (antifreeze solution for the cold season):

- Pour the necessary amount of water in a vessel and then pour in calcium chloride until the established quantity has been reached. Never pour water on to the calcium chloride as this would cause a violent reaction.

- Only use the solution after it has completely cooled. To limit the acidity, add 1% of soda in proportion to the calcium chloride used.

- After inflating the tyre, thoroughly rinse any metal parts that may have been wetted with this corrosive solution, with water.

How to deflate the tyres

– Jack up the tyre in question (Fig. 4-44) and set it with its valve pointing downwards.

– Unscrew the mobile union of the valve and allow the water to drain from the tyre.

– Tighten the relative union into the valve housing and place the tube (4) in contact with the tyre.

– Blow in pressurized air through the union (2): the remaining water will drain through the tube (4).

– Remove the union (3), replace it with the valve retainer and then inflate the tyre.

NOTE - Never use ballasting systems differing from the ones indicated above.

CAUTION: Ballasting with water and anti-freeze solution containing calcium chloride might cause corrosion of the parts in contact with the solution.

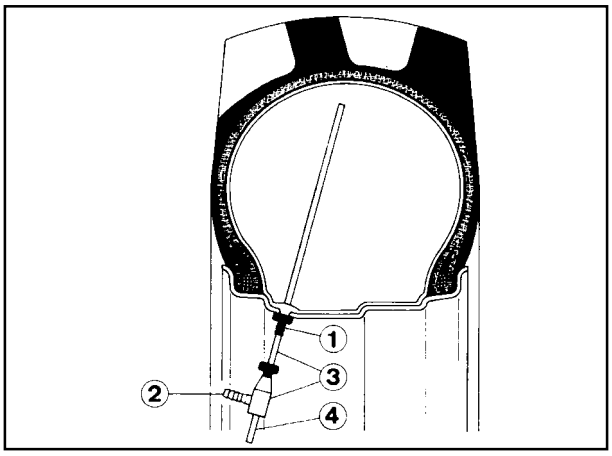


Fig.4-44-Indicative layout for water ballasting.

1 - Valve housing.
2 - Water tube union.
3 - Special fitting to pour in and drain out the water.
4 - Air bleeding tube.

Implement hitch

The three point linkage is used to connect the tractor to implements controlled by the hydraulic power lift.

The three point linkage is suitable for connection to implements of various classes according to the layout and data given in Fig. 4-45.

As a standard, the tractor is provided with a Class 2 three point linkage. Alternatively, a Class 1 linkage can be provided.

Hitching the implement

To allow the lift to operate in the correct way, you must carefully check the dimensions of the implements to be coupled to the tractor.

These couplings must be the same standard size as the three point linkage of the tractor to prevent the whole assembly from being subjected to irregular stress during work, caused by dimensional incompatibility. See dimensions shown in Fig.4-45.

Weight of the implement

To prevent the regular operation of the lifting system from being impaired, the weight of the implements must be less than the maximum load the lift can raise. This value (given in the specifications) is only indicative, since the distance at which the center of gravity of the implement is set in relation to the three point linkage can also exercise a notable influence.

If an implement, even when lighter than the indicated weight, is set at an excessive distance from the tractor, it will bear down on the three point linkage with a much greater weight than the weight of the implement itself.

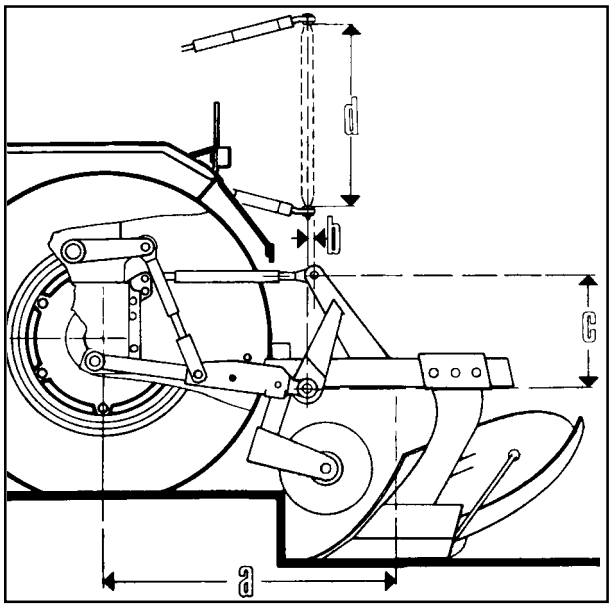


Fig.4-45 - Implement hitch dimensions
a. Distance of the center of gravity of the implement. As small as possible (the heavier the implement, the shorter the distance must be).
b. Retraction of the third point: 0-80 mm
c. Height of hitch triangle: 460 mm
d. Length of bar:
Class 1: 683 ± 1.5 mm
Class 2: 825 ± 1.5 mm

NOTE: *The plough shown in the figure is purely indicative since the dimensions are valid for any type of implement.*

Three point linkage

The articulated device with three point suspension mainly consists of the following components (Fig.4-46):

Adjustable top link (3rd point)

The adjustable top link (1 - Fig. 4-46) is connected to the support by means of two holes. The correct hole to use depends on the height of the implement.

The length of the link can be varied so that the angle of the implement can be regulated in relation to the ground.

Shorten the top link to increase the angle of attachment, lengthen it to decrease the angle.

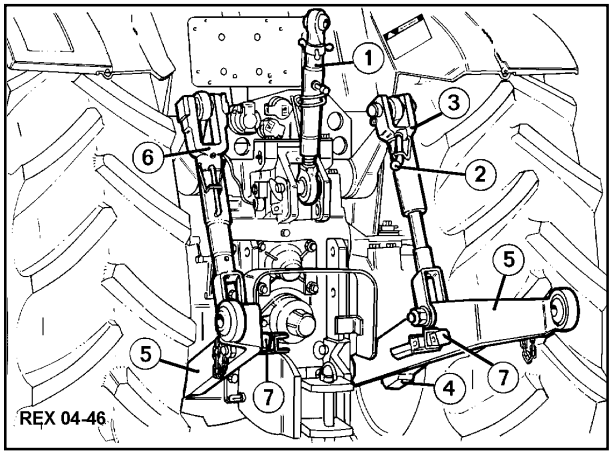


Fig.4-46 - Three point linkage.
1 - Top link with length adjustment sleeve.
2 - Crank to adjust the length of rh lift rod (on request).
3 - Rh lift rod.
4 - Side stabilizer (2 pcs).
5 - Lower links.
6 - Lh lift rod with length adjustment device.
7 - Adjustment screws for side swing of lower links.

During work, the top link must slightly descend towards the tractor, when the lower links are parallel to the ground.

When work using lifting in draft control mode is carried out, you must not forget that it is preferable to couple the implement to the top hole when the towed load is particularly heavy.

Adjustable rh lift rod

The length of the rh adjustable lift rod (3 - Fig. 4-46) can be adjusted by means of the relative crank (2). This adjustment is very useful since it levels the implement depending on the type of work being carried out.

Turn the lever clockwise to shorten the rh vertical lift rod.

Turn the lever anticlockwise to lengthen the rh vertical lift rod.

On request the rh adjustable lift rod can be equipped with a hydraulic jack (8 - Fig. 4-47), operated from the driving seat and during the work, to adjust the cross angle of the implement.

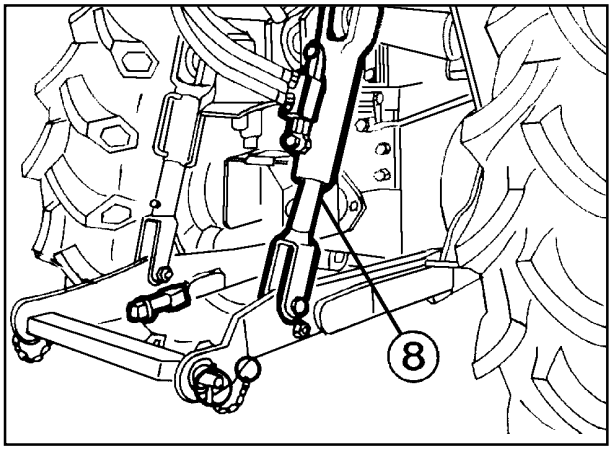


Fig.4-47 - Rh lift rod, with hydraulic adjustment
8 - Hydraulic jack.

Side stabilizers

The side stabilizers (4 - Fig. 4-46) can be set to reduce side swing of the lower links of the three-point linkage.

When working with implements such as graders, rollers, hoes, weeders, etc. the side swing of the lower links can be adjusted according to the job on hand.

When working instead with ploughs, disk harrows, etc. the stabilizers can be set to allow the lower links to swing freely.

For the transport on road with lift links in high position, lower links side swing must be restricted independently of any previous adjustment during work.

Turn the stabilizers (7 - Fig.4-48) for the adjustment:
- turn anti-clockwise to increase side swing of three-point linkage;
- turn clockwise to reduce or even stop side swing of three-point linkage.

If the three-point linkage is set on float mode, it is necessary to check that side swing is simmetrical on both sides, taking the rear wheel rim as a reference.

Swing the three-point linkage all to the right and measure the distance from lower link to wheel rim.

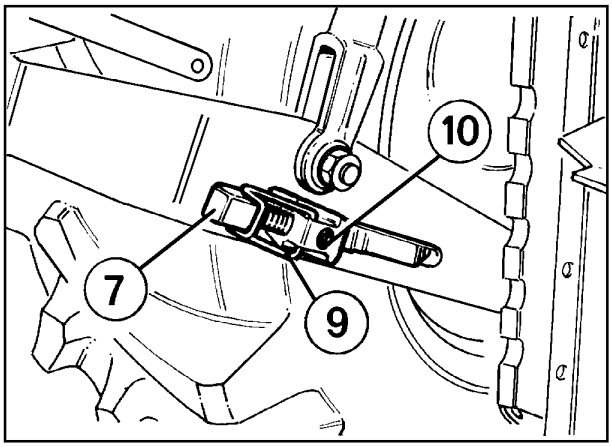


Fig.4-48 - Adjustment screws for side swing of lower links.
7 - Adjustment screw; 9 - Screw lock; 10 - Grease nipple.

The same operation must be repeated on the left side. Both dimensions should be identical. If not, use the adjustment screws (7).

If a rigid three point linkage is needed, e.g. when working with mounted sowing machines, the adjustment screws (7) must be tightened to block lower links swing.

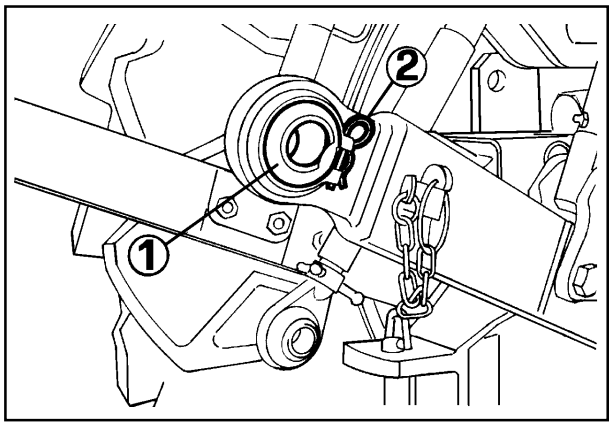


Fig.4-49 - Lower links with interchangeable ball-ends
1 - Ball-end.
2 - Safety pin.

Lower links

The lower links (5 - Fig. 4-46) transmit draft and support to the implement. The lower links are available in the following types:

– lower links with fixed ball-ends, for all models;

– lower links with Class 1 and 2 interchangeable ball-ends;

– lower links with quick hitch couplings.

Interchangeable ball-ends

To make it easier to adapt the three-point hitch to the various types of implement used, Class 1 and 2 interchangeable ball ends (1 - Fig.4-49) are mounted on the ends of the lower rods of the three-point linkage.

To change, remove the safety pin (2 - Fig.4-49) and turn the ball end to align the shaped part with the race at the end of the rod.

Mount the new ball end, then lock it in place with the safety pin (2), checking to make sure that it is free to turn in its housing.

Quick hitch couplings (Fig.4-50) - on request

To hitch an implement, reverse the tractor towards it so that the lower links are in the direction of the ball-ends fixed to the crossbar of the implement. Slowly raise the links (4) of the power lift until the ball-ends automatically push against the spring-loaded quick-hitch couplings (3) and are locked into place.

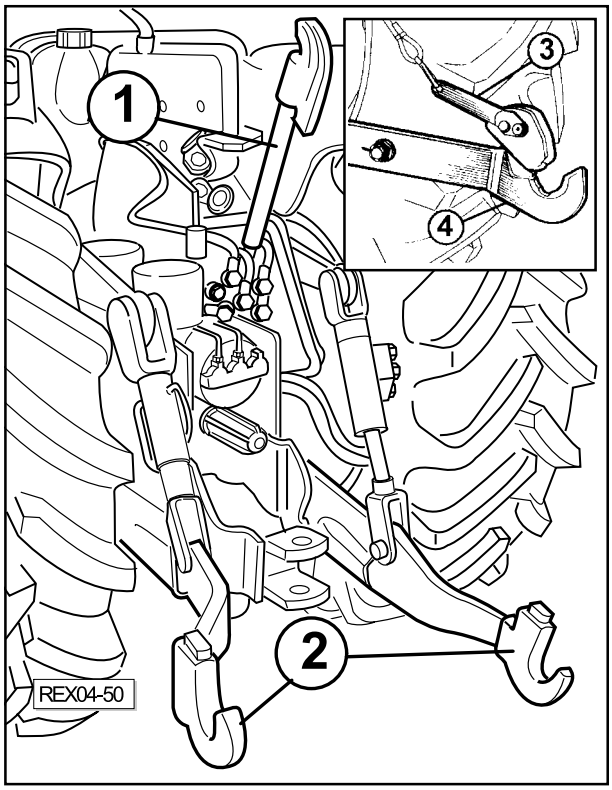


Fig.4-50 - Quick hitch couplings

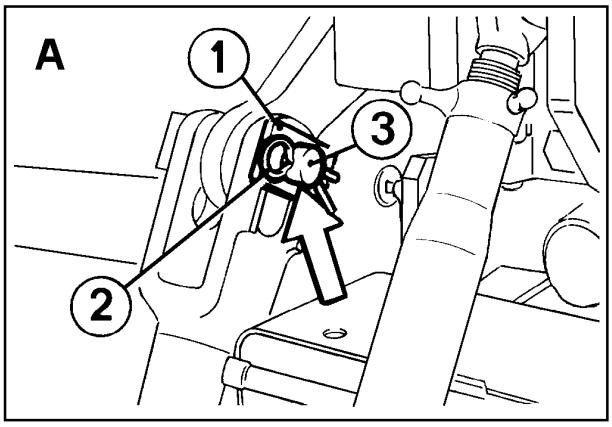
Three point linkage with quick hitch couplings (Fig.4-50) - on request

Third point quick hitch coupling (1).
Quick hitch coupling on the lower links (2)

LH adjustable lift rod

The left-hand adjustable lift rod (6 - Fig.4-46) can be adjusted in length by means of the relative crank. This adjustment is very useful since it levels the implement depending on the type of work being carried out.

Two further adjustments are possible by turning the backing plates through 90°. This gives two adjustments, one with fixed plate (A - Fig.4-51), the other with the plate free to slide (B - Fig.4-51). The latter position must be used for wide implements, that require a certain freedom of side swing (cultivators, spaders, harrows, etc.).



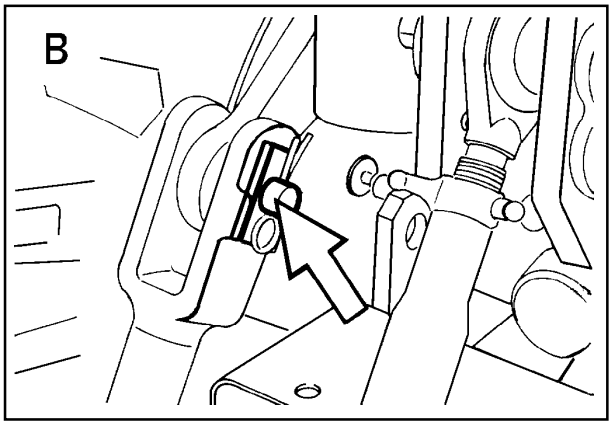


Fig.4-51 - Lh adjustable lift rod.
A - Adjustment with fixed plate.
B - Adjustment with sliding plate.
1 - Backing plate; 2 - Backing plate stop; 3 - Lift rod backing plate.

Hitching the implement

1 - Allow the three point linkage to descend.

2 - Adjust the top links so as to give the maximum side play.

3 - Back up the tractor.

4 - Connect the coupling bar of the implement to the ball-ends of the lower links and lock it in place with the safety pins.

5 - Adjust the length of the top links to give the implement freedom of sideways movement or lock it in place according to the type of work required.

6 - Connect the top link.

Releasing the implement

1 - Lower the implement completely to the ground.

2 - Shorten the side stabilizers to give maximum play to the lower hitching links.

3 - Remove the safety pins and release the coupling bar.

Important recommendations when using and adjusting the three point linkage.

Warning: *Always stop the engine before making any adjustments to the three point hitch or the implement.*

Warning: *Always use the lift in position control mode when transporting implements hitched to the three point linkage.*

Warning: *Always use the lift in position control mode when an implement is hitched or unhitched to or from the three point linkage.*

Warning: *When the tractor is stopped, always lower any implements connected to the three point linkage.*

Warning: *Never ever work under an implement kept raised by the hydraulic lift alone. Always block it safely with a suitable support and turn off the engine.*

Mechanically controlled hydraulic power lift

The hydraulic power lift allows the implements connected to the three point linkage to be lifted and lowered. It consists of a lifting unit that includes the ram and controls, a gear pump and the connecting tubes.

Description of controls - Fig.4-52

The lift link levers are provided with symbols to inform the operator about the correct lever position for each function.

1 - Lift link lever.

The lift links are completely down when the control lever is in this position

The lift links are completely up when the lift links are in this position.

2 - Selector lever for draft control, position control, and mixed draft and position control (INTERMIX).

Lever at end of forward travel = full draft control zone

Lever at end of backward travel = full position control position.

INTERMIX

Lever between the two end of travel positions = mixed draft and position control zone divided into two parts:
blue zone = position control increases as the lever nears the end of front travel position
red zone = draft control increases as the lever nears the end of back travel position.

3 - Nut to lock lever (1).

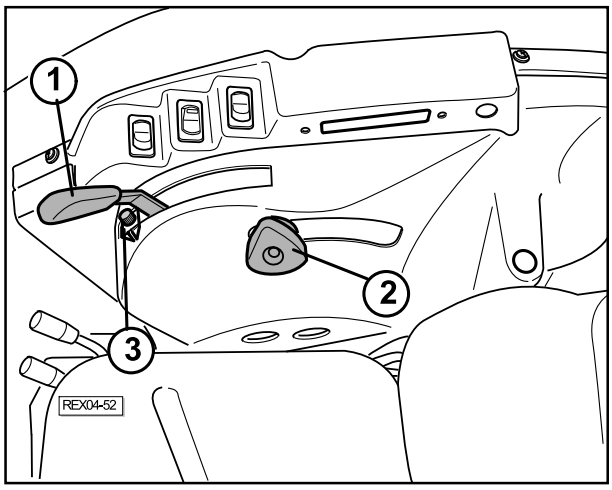


Fig.4-52 - Power lift control levers of mechanically controlled power lift
1 - Lift link lever.
2 - Selector lever for draft, position and Intermix control.
3 - Nut to lock lever (1).

Up/down buttons to automatically raise/lower the lift arms - If installed Fig.4-53
(On request on some markets only)

1. Up button
2. Down button

To lower the implement, fully depress the button (2), The lift arms will lower to the stop previously set by the control lever (1) Fig. 4-53.
To raise the implement, push the button (1) Fig. 4-53 back as indicated by the arrow to release the button (2). The lift arms will raise tu the upper stop.

***WARNING:** If the mounted implements you are working with are connected to the PTO and require the use of the automatic up/down control, the lift rods should be adjusted to the maximum length to avoid any damage to the drive shaft.*

Maximum height adjustment (3) (if mounted, on request).

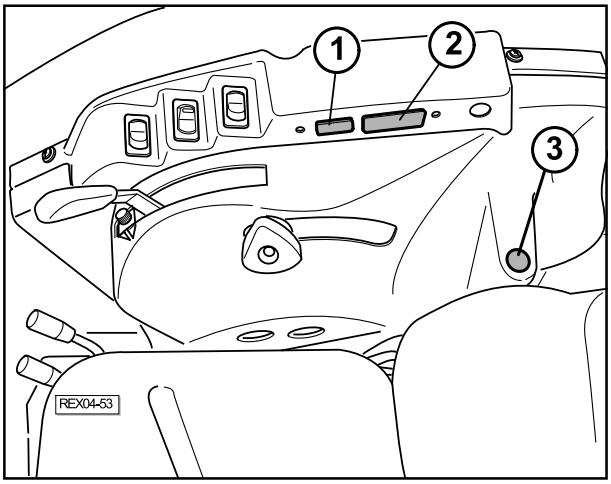


Fig.4-53

Work in position control mode

Position control mode allows the implement to be brought to and kept in a certain position, whichever this may be. This includes the highest and lowest positions either in or out of the soil.

Position control mode (Fig.4-55) is used for:

- Mounted implements, i.e. without wheels or other components allowing them to rest on the ground (e.g.: graders, scrubbers, drills, fertilizer-spreaders, etc.).

- Semi-mounted implements, i.e. equipped with wheels or other components allowing them to rest on the ground (e.g.: rotary ploughs, trenchers, weeders, seeders, etc.).

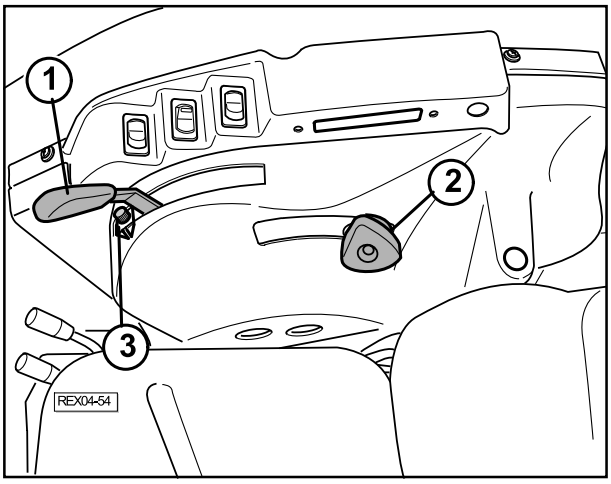


Fig.4-54

Use of controls in control position (Fig. 4-54)

- Move the lever (2) fully back to the position control setting.

- To regulate the work position of the implement, progressively move the control lever (1) downwards or upwards until the desired position has been reached and then lock the check nut (3) under the lever itself to obtain the same work position on each run.

- At the end and the beginning of each run, use the automatic up/down buttons (if installed - Fig. 4-53).

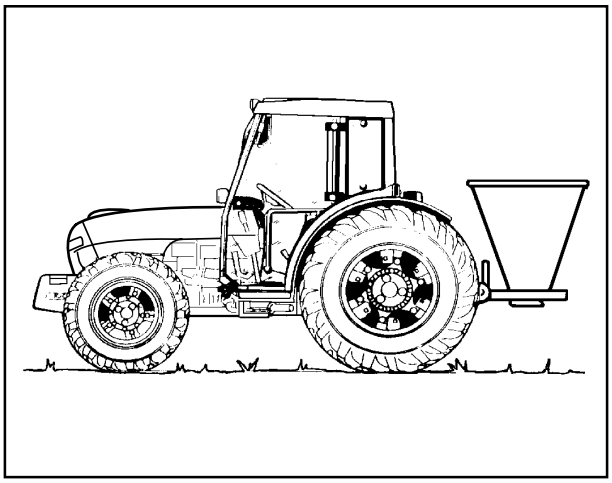


Fig.4-55 - Work in position control mode.

Work in draft control mode

Lift operation in draft control mode automatically keeps the tractive force of the tractor at a steady rate regardless of variations in the soil conditions.

Draft control mode is used with all mounted tractor implements which do not rest on the ground (e.g.: with skids, wheels, etc.) (Fig.4-57).

Use of controls - Draft control mode (Fig.4-56)

- Move the selector knob (2) fully forward to the draft control function.
- To dig the implement in quickly at the beginning of the furrow, move control lever (1) progressively forward. After this, lift it gradually to set to the desired work depth. The depth reached by the implement is proportional to the extent of lever travel.
- When the desired position has been reached, lock the lever with the check nut (3) to obtain the same work position on each run.
- Move control lever (1) back to raise the implement at the end of each run. Use the automatic up/down buttons, if installed.
- When shallow depths are required, the control lever travels only a very short length.
  To avoid that the implement digs in too slowly, it is better first to bring the lever fully forward at the beginning of each run over the check nut (3). After this, bring the lever progressively back to the desired position, once again over the check nut (3).
- At the end and the beginning of each run, use the automatic up/down buttons (if installed - Fig. 4-59).

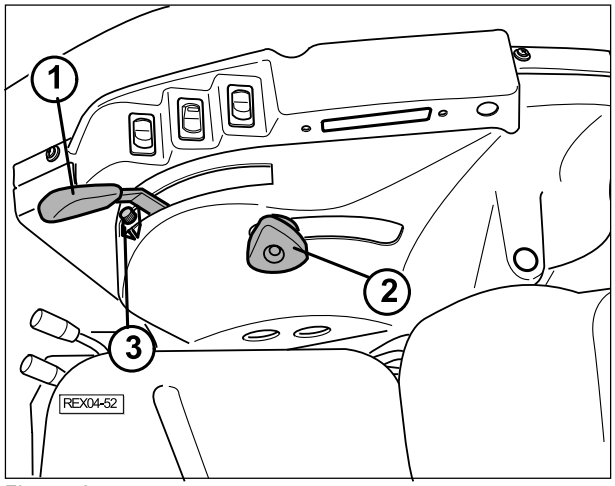


Fig.4-56

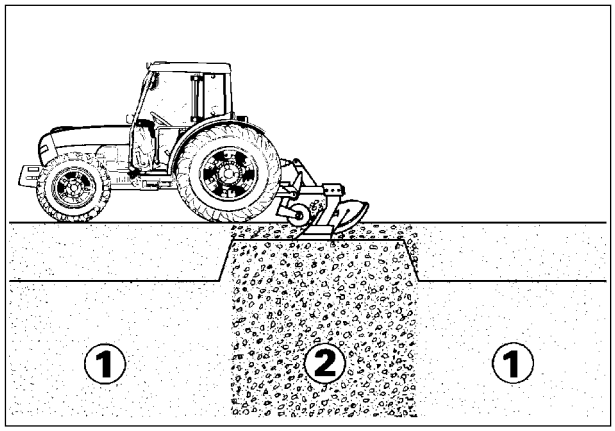


Fig.4-57 - **Lift in full draft control mode (selector lever fully forward).** The work depth of the implement may vary considerably depending on the consistency of the soil (e.g.: zone 1 = normal soil, zone 2 = very hard and compact soil).

Swinging support

A further control on the sensitivity can be obtained by correctly choosing the top link connecting hole (A) on the swinging support (Fig.4-58).

Set the top link in the lowest hole (1) to increase the draft control sensitivity.

Set it in the top hole (2) for the least sensitivity.

Warning: *never tow with the top link connected to the floating support of the hydraulic power lift.*

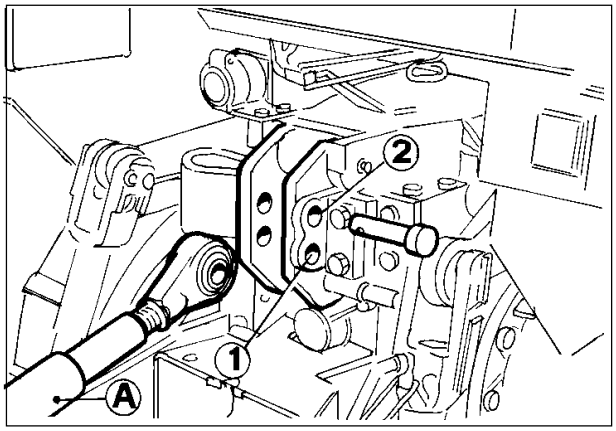


Fig.4-58 - Holes (1 - 2) to connect the top link (A) with the swinging support.

Mixed position and draft control (Intermix)

Power lift operation in mixed control mode allows the reactions of the power lift to be varied by combining position control with draft when working with implements that do not rest on the ground and that work at depth, such as ploughs, harrows, subsoilers, etc. When the lever (2 - Fig.4-59) is moved completely downwards, the lift will operate in full draft control mode, while full position control mode is obtained by moving the lever completely upwards.

The lever can assume as many positions as there is space between the two ends of the sector. Its vicinity to the front or rear part influences draft or position control to a greater extent, as shown in the examples.

The operator must therefore identify the best position for the selector lever according to the type of soil being worked, thus obtaining the best compromise between draft variations and depth.

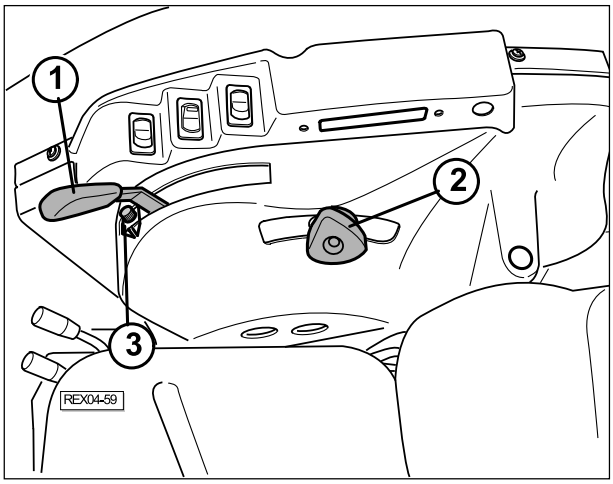


Fig.4-59

Work best carried out in mixed position and draft control mode (Intermix) (Fig.4-60)

Work with the plough

a) When working soils of strongly different types (sandy zones mixed with clayey ones) where full draft control could lead to excessive depth variations.
b) When shallow depths are required.
c) To achieve the best work conditions with semi-mounted ploughs with several shares.

Work with other implements

Whenever a certain draft control is required to obtain a more regular draft from the tractor. A certain measure of controlled draft causes variations in the work depth. Thanks to such variations, the tractor's draft power is steadier.

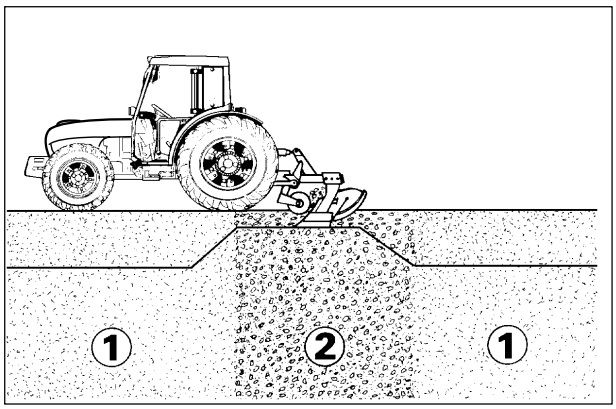


Fig. 4-60 Lift in «Intermix» mixed position and draft control mode. The maximum and minimum work depths of the implement are limited to the average work value (e.g.: zone 1 = normal soil, zone 2 = very hard and compact soil) since movement of the lever towards position control mode has reduced the operating sensitivity of draft control mode and has partially activated position control.

Floating position

This position is used for implements that must simply rest on the ground and follow its contours (e.g.: roller, seeder, etc.) (Fig. 4-60b).

In this case, the lift links are completely free to swing and the lift just lowers and raises the implement at the beginning and end of the run.

(Fig.4-59) Use of the lift in float mode is obtained by setting the lever (2) fully back in the position control setting and the link control lever (1) fully forwards. Just use the control lever (1) to lift or lower the implement.

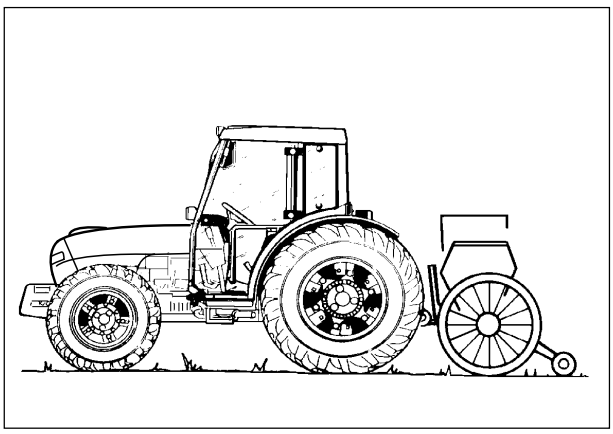


Fig. 4-60b

AUXILIARY CONTROL VALVES
Platform tractors - Fig.4-61a and 4-61b

A maximum of four auxiliary control valves can be installed on request on the right side of the hydraulic power lift. These valves control the external rams and are coupled to the hydraulic power lift system and use the same oil of this system.

A maximum number of auxiliary control valves can be mounted depending on tractor version:

– Versions GE and F: max. 2 aux. control valves (Fig.4-61a);
– Version XL: max. 3 aux. control valves (Fig.4-61a).

The levers of the auxiliary control valves connected to the lift hydraulic circuit are mounted on the console on the right-hand side of the driver's seat.

Joystick 3 (Fig.4-61b) - (In development, available only on request) It is coupled to two auxiliary control valves. If shifted forwards, it controls the 1st valve, if shifted laterally it controls the 2nd valve. With a three position locking device.

Levers 1 and 2 (Fig.4-61b) are coupled each to its own auxiliary control valve with locking device (2).

The third lever (on request for GT version) controls an auxiliary control valve coupled to two quick-hitch copuplings of the «Push-Pull» type with locking device 3 in neutral.

NOTE: *To ensure that the hydraulic circuit operates in a regular way, the level of the transmission oil must be frequently checked and topped up if necessary, as indicated in the "Checking the transmission oil lever" part of the Maintenance chapter.*

WARNING: Make sure that the hydraulic cylinders of the connected implements contain the same type of oil as the transmission unit of the tractor to prevent this from being polluted and leading to faulty operation.

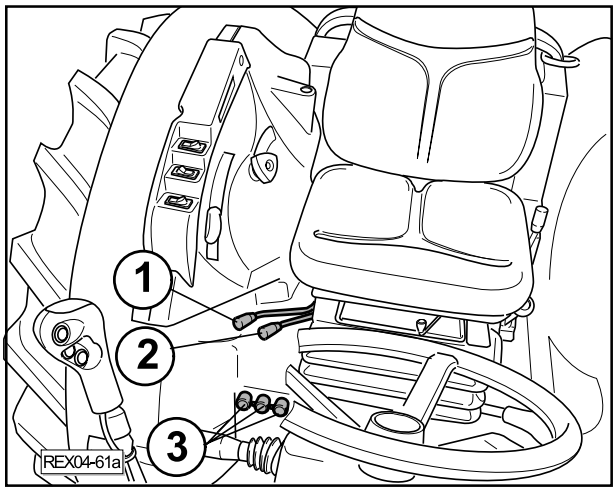


Fig.4-61a

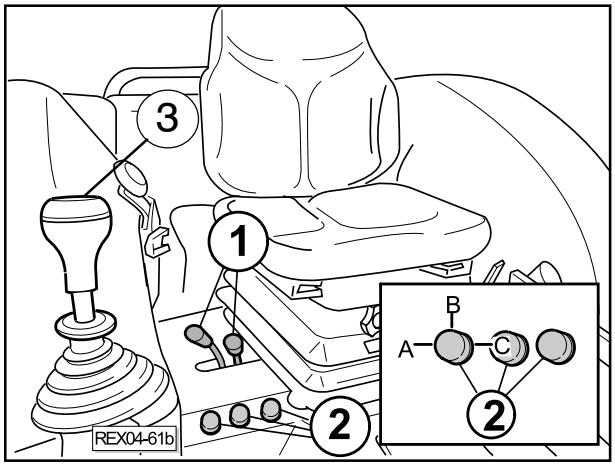


Fig.4-61b

Lock and single/double-acting conversion knob (2 - Fig.4-61)

Pos A - Turn anti-clockwise for single acting (SE) mode.
Pos B - Central position (DE) for double acting mode.
Pos C - Turn clockwise to lock the lever in neutral position.

Control valve operation

Different types of control valves can be mounted depending on specific work requirements:

- Normal control valve to feed single or double acting cylinders.
  The control lever (Fig.4-62), if released, goes automatically back to the rest position, thus locking the implement in the position it has reached.

- Control valve with kick-out and floating position (on request for some models), convertible single/double acting. The control lever (Fig.4-62) is locked in lift or lower position. At the end of travel of the cylinder, the lever is automatically released by the pressure and goes back to the neutral position, It is always possible to manually bring the lever back to the neutral position before the cylinder reaches the end of travel.

- Control valve with floating position: for implements that need a constant and automatic adjustment of the work position. The floating position is obtained as follows. Shift the control lever fully forward to the position in which it remains locked at end of travel.

- Specific control valve to be used with hydraulic motors (on request).

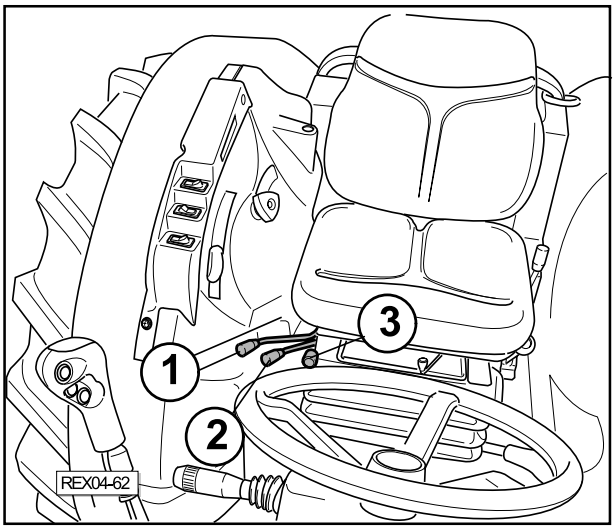


Fig.4-62

Flow divider (on request)

On request, a flow divider can be mounted that is coupled to the first auxiliary control valve, preset for this use. The knob (3 - Fig.4-62) can be adjusted to have a regulated flow at the first control valve nearest to the flow divider.

Knob (3) turned clockwise: the flow in the nearest control valve is reduced to a minimum of 2 litres/min. The exceeding flow is available for the next control valves or the hydraulic power lift.

Knob (3) turned anti-clockwise: the flow in the nearest control valve is increased to maximum flow of the hydraulic pump. The exceeding flow is available for the next control valves or the hydraulic power lift.

If, after the flow divider regulation, the auxiliary control valve coupled to the divider is not used, the whole flow of the hydraulic pump is available for the next control valves or the hydraulic power lift.

Quick couplings - (Fig.4-63a)

Each control valve has two quick coupling female half-connections of the "Push-Pull" type (Fig.4-63a) that can be connected to male half-couplings of any make so long as they are of the same size. The half-coupling is very simple to couple and uncouple: push to connect and pull to detach.
Red - delivery/lifted
Yellow - return/lowered

***WARNING:** Discharge any pressure from the circuit before hitching or unhitching the quick couplings.*

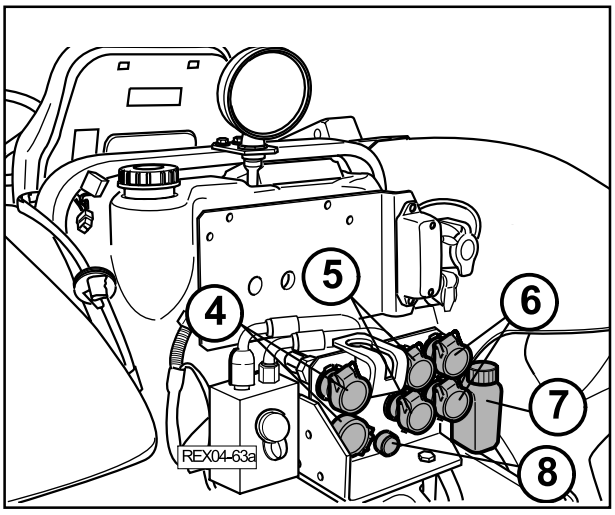


Fig.4-63a

Oil sump - Fig. 4-63a (if installed)

Each quick coupling is connected to an oil sump (7) that collects oil leaks due to hitching and unhitching of the quick couplings. When the oil reaches the maximum level, the sump should be emptied in collecting tanks so as not to contaminate the environment.

Free discharge (if installed)

A coupling for the free flow to the gearbox case is provided on the tractor for the hydraulic applications requiring a free reeturn flow of oil without passing through the quick couplings provided on the tractor.
Front free discharge (3 - Fig.4-63b)
Back free discharge (3 - Fig.4-63a)

Front auxiliary control valves (on request)

For special applications requiring a higher number of control valves, on request the tractor can be provided with two front control valves controlled by the joystick (2 - Fig.4-63b)

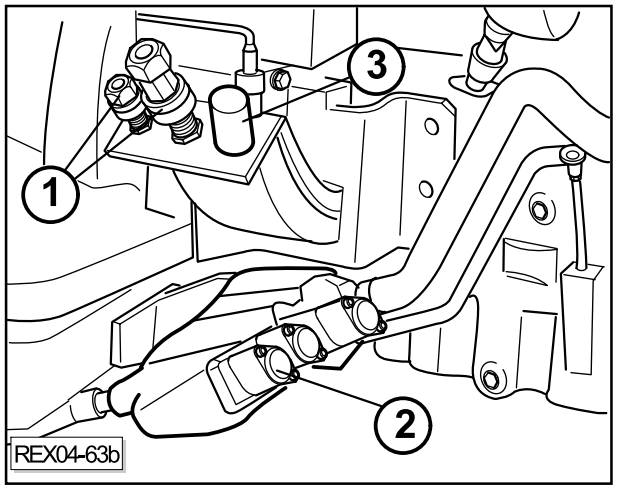


Fig.4-63b

Auxiliary control valve with electro-hydraulic selector (on request)

On request an auxiliary control valve can be installed, coupled to a 3-position electro-hydraulic selector to control, by means of the control valve lever, either the rear quick couplings, or the hydraulic top link, or the right-hand leveling ram.

The selector (1-Fig.4-64a/b) has three positions: A-0-B.

Pos. 0 - In this position the control valve lever feeds the rear quick couplings to operate external hydraulic rams. (1 - Fig.4-65)

Pos. A - In this position the control valve lever controls the hydraulic top link. (4 - Fig.4-65)

Pos. B - In this position the control valve lever operates the right-hand leveling ram (2 - Fig.4-65) that regulates the three-point linkage.

Quick couplings
Each control valve has two quick coupling female half-connections of the "Push-Pull" type (Fig.4-65) that can be connected to male half-couplings of any make so long as they are of the same size.
The half-coupling is very simple to couple and uncouple: push to connect and pull to detach.

Oil sump (3 - Fig.4-65) that collects oil leaks due to hitching and unhitching of the quick couplings. When the oil reaches the maximum level, the sump should be emptied in collecting tanks so as not to contaminate the environment.

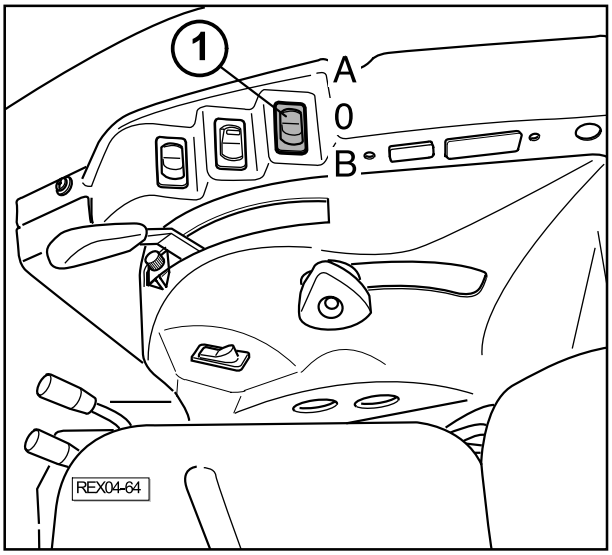


Fig. 4-64a - Mechanical lift

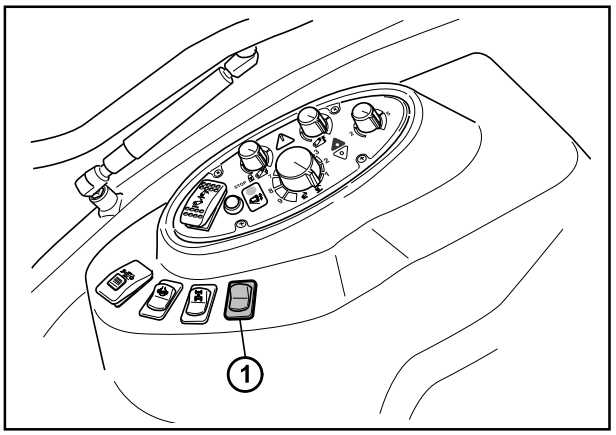


Fig. 4-64b - Electronic lift

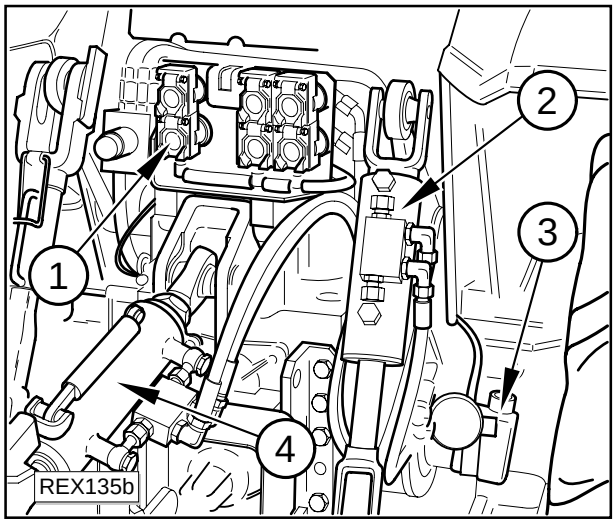


Fig.4-65

Safety frame

The tractor is equipped with a safety frame (Fig.4-66) mounted behind the driving seat and approved according to the CURRENT OCSE and EEC STANDARDS. The protective structure is formed by two parts, one upper and one lower, which are bolted together.

The tractor must only be used with the protective structure in the upright position (Fig. 4-66).

***WARNING**: The tractor could tip up if used incorrectly. Protection is only guaranteed when the protective structure is in its original upright position with the fixing bolts tightened as described in the assembly instructions.*

***WARNING:** It is absolutely forbidden to tie towing chains or ropes to the safety frame or the tractor could jack up. Always tow using the proper devices supplied with the tractor.*

Safety belts can be fitted, depending on the laws in force in the various countries of use. Always wear the safety belts with the protective structure in the upright position.

Never wear the safety belt when the protective structure is lowered.

If the tractor there must pass through low places or be parked their for maintenance purposes and the top part of the protective structure must be folded at an angle, remember that there is not enough protection for the tractor driver in this position and that he could risk serious injury. Remember that after use in low places, it is absolutely necessary to set the protective structure back in its upright position (Fig. 4-66) before continuing with any work.

Comply with the following procedure if it is essential to fold down the protective structure for the above reasons (Fig.4-66 and Fig.4-67):

- Remove the beacon (2) to avoid damaging it.
- Remove the safety pins and the fixing pins (3) from both sides.
- Overturn the protective structure (1) and insert the pins (3) in the front holes of the support on both sides. Rest the structure on the support.
- Fit the fixing pins in their seats again.
- **Before you use the tractor again in any way, set the protective structure (1) back in the upright position by carrying out the operations described above in reverse order.**
- Fit the beacon (2) again if it had been removed.

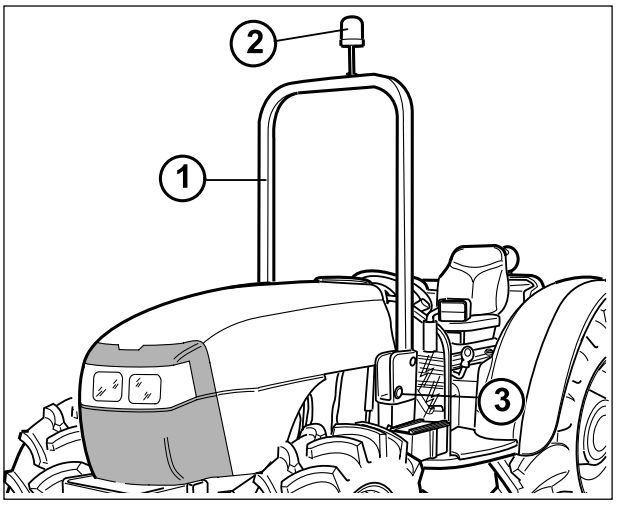


Fig.4-66

WARNING

Avoid injury! Make certain all parts are installed correctly if the safety frame is loosened or removed for any reason.
The protection offered by the safety structure will be impaired if it is is subjected to structural damage, as in an overturn accident, or is in anyway altered by welding, bending, drilling or cutting. A damaged safety structure should be replaced, NOT reused. Always keep upper part of the safety structure pinned in vertical position (as in the above Fig. 4-66) when operating the tractor. If the tractor is operated with the safety structure folded down (e.g. to enter a low building) drive with extreme caution and DO NOT use seat belt.
Fold the safety structure up again as soon as the tractor is operated under normal conditions.

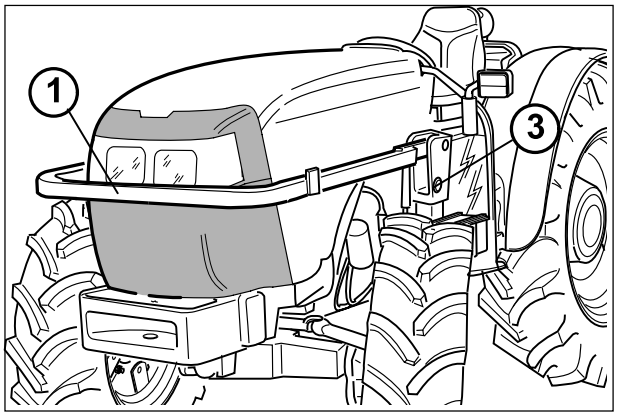


Fig.4-67

Tractor transport

Towing the tractor

If you need to tow or push the tractor for a brief distance, remember that the power steering system will allow you to drive and steer it for a short way with the engine off.
Put the following controls in NEUTRAL (Fig. 4-68 Controls with Powershuttle and Fig.4-69 Controls with mechanical reverse shuttle):

1- Reverse shuttle lever (1)

2- Gearshift lever (2)

3- Range selector lever (5)

4- (With Powershuttle only) Disengage the Park Lock (7 - Fig. 4-68)

5- Disengage the parking brake (6)

6- Ensure that the electro-hydraulic PTO switch is in disengaged position (4 - Fig. 4-68)

6- Ensure that the PTO lever (mechanical version) is in disengaged position (4 - Fig. 4-69)

How to drive the tractor

- To drive the tractor, you will need to excercise greater effort if the engine is at a standstill.
- Slow and stop the tractor with the brake pedals latched together (3)
- Tow or push the tractor at moderate speed.

How to safely drive the tractor

- Affix the slow moving vehicle card (SMV-Slow Moving Veicle).
- Use the revolving beacon and the hazard lights.
- Strictly comply with the laws in force in the country where the tractor is used.

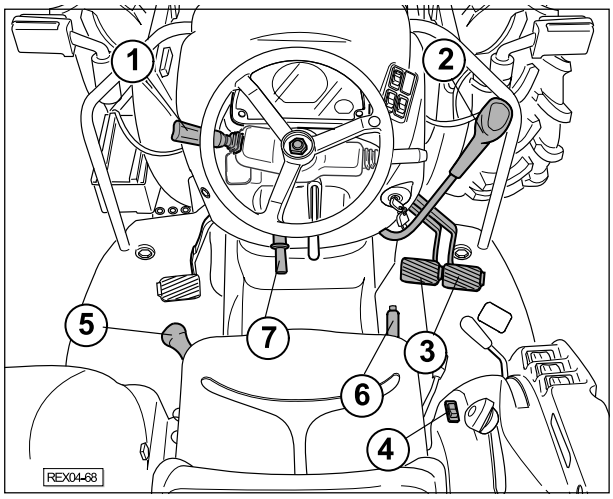


Fig.4-68 - Controls with Powershuttle

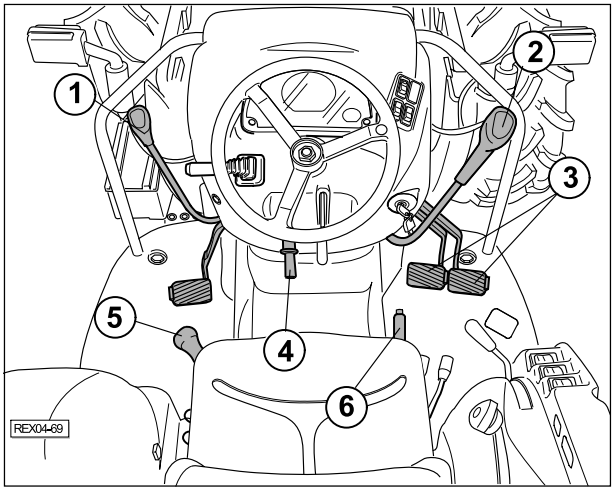


Fig.4-69 - Controls with mechanical reverse shuttle

Tractor transport

The tractor must be transported with a suitable vehicle.
Engage the parking brake (6 - Fig.4-68 - Fig.4-69).
Engage the Park-Lock (with Powershuttle only) (7 - Fig.4-68).
Firmly fasten the tractor to the transport vehicle using suitable chains or straps.(Fig. 4-70)
Use the tow bar or its supports as rear fixing points for the tractor.

***CAUTION:** Never hitch or connect chains around the tractor components as these could be damaged by the chains themselves or by excessive loads.*

The trailer must be provided with the warning signs and lights required by the local laws in force.

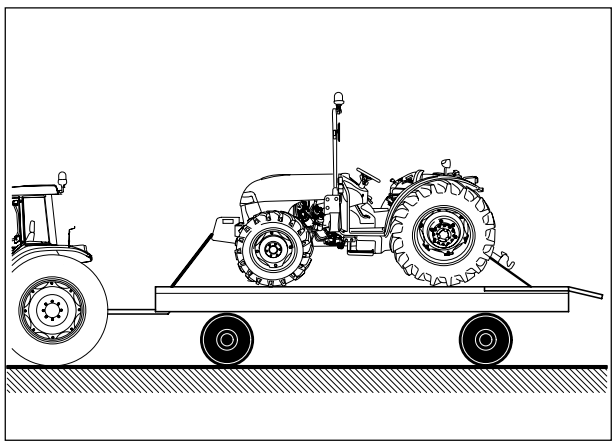


Fig.4-70

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Chapter 5
Maintenance

ROUTINE MAINTENANCE TABLE

The numbers in the second column refer to the operations described in the following pages, listed on chronological order.

Work hours	Operation number	Description	Top up level	Clean	Adjust	Replace	Check for function	Lubricate	Page
Variable maintenance (4)	1	Engine oil level	●						118
	2	Oil level in gearbox, power lift and steering systems	●						119
	3	Battery	●						120
	4	Fuel filter		●					121
	5	Engine coolant expansion tank	●						121
	6	Engine coolant radiator		●					122
	7	Gearbox and hydraulic circuits oil radiator		●					122
	8	Air conditioning system condenser		●					122
	9	Dry air filter discharge valve		●					123
	10	Dry air filter cartridge		●					123
	11	Alternator and fan belt			●				124
	12	Air conditioning compensator belt (cab version)			●				124
	13	Mechanical clutch pedal - Speed Five			●				125
	14	Mechanical PTO clutch hand lever			●				125
	15	Brake oil level	●						126
	16	Brake pedals (3)			●				127
	17	Parking brake			●				128
	18	Oil level in rear final drives	●						129
	19	Oil level in front differential housing and front final drives	●						129
	20	Tyre pressure					●		130
	Miscellaneous	Wheel nut tightness					●		130
		Tightness of nuts and bolts in general					●		130
		Tightness of safety frame fixing pins					●		130
		Windscreen wash liquid	●						130
Every 100 hours service	21	General lubrication						●	131
	22	Lubrication of 4WD front axle						●	132
	23	Lubrication of 2WD front axle (if mounted)						●	133
Every 250 hours service	24	Engine sump (5)				●			134
	25	Engine oil filter (5)				●			134
	26	Oil filter on the intake (2) of steering and power lift circuits				●			135
	27	Oil filter on the delivery (2) of the steering circuit and Power Shuttle (if mounted)				●			136

Work hours	Operation number	Description	Top up level	Clean	Adjust	Replace	Check for function	Lubricate	Page
Every 500 hours service	28	Engine valves			○				137
	29	Fuel filter (6)				●			137
	30	Front wheel hubs 2WD (if mounted)						●	138
	30b	Engine breather cleaning (according to engine type) (7)				○			138
Every 1000 hours service or 1 year	31	Injectors and injection pump			○				139
	32	Oil in transmission, power lift circuit and steering circuit (1)				●			139
	33	Rear final drives				●			140
	34	Steering cylinder knuckle joint			○				140
	35	Replace oil in front differential housing and front final drives				●			141
	36	Starter motor and alternator					○		142
	37	Dry air filter				●			142
	38	Engine cooling system		○					143
	39	Drain sludge from fuel tank		○					144
General maintenance		Bleed air from fuel system							145
		Bleed air from rear and front brake circuit							146
		Electrical system							149
		Long idle periods of the tractor							157

NOTES

○ Operations that must be performed by an authorized dealer or service agent.

(1) *Change the gearbox oil for the first time after 500 hours, then change it after every 1000 hours service (1000-2000-3000 etc...)*

(2) ***CAUTION:*** *To safeguard the power lift filter and the steering circuit, wash the filter on pump intakes and change the filter on the steering circuit delivery and Powershuttle for the first time after 50 hours. After this, repeat the same operations after every 250 hours service (250-500-750 etc...).*

(3) *Have the brakes adjusted after the first 50 hours work.*

(4) ***CAUTION:*** *Use your own discretion and experience when deciding the actual intervals for variable interval service and maintenance operations. Always remember, however, that it is better to perform them too often than not often enough.*

(5) ***CAUTION:*** *Change the engine oil and relative filter cartridge after the first 50 hours work. After this, change the engine oil and engine oil filter at the intervals given in the 'Routine Maintenance Table'.*

(6) ***CAUTION:*** *Replace the fuel filter twice during the first 100 hours service (after 50 hours and after 100 hours). After this, replace the fuel filter at the intervals specified in the 'Routine Maintenance Table'.*

(7) *The closed circuit bleeding unit (if mounted) should be replaced every 8000 hours or on a general engine overhaul.*

Lubrication and maintenance

Foreword

This section described the operations required to correctly service your tractor. The lubrication table on page 112 and 113 can be used for quick reference. Each operation is numbered for easy consultation.

***WARNING:** Park the tractor on flat ground and, if possible, extend all the cylinders before you check the oil levels.*

Safety precautions

Read and comply with all the safety precautions in the "Tractor maintenance" part of the Safety Notes Section.

NOTE: *Old fluids and used filters must be disposed of in the correct way.*

***WARNING:** Do not carry out inspections, maintenance work or adjustments on the tractor whilst the engine is running.*

Sealed units

Do not remove the seals from the following parts: injection pump and overspeed screw.
If you need to repair or adjust any of these units, contact your local dealer or authorized repair shop.
The warranty is automatically invalidated if these seals are tampered with.

Running in

Fade-free efficiency and a long working life largely depend on how the new tractor is treated during the running in period. It is therefore extremely important to follow these instructions:

- Your engine does not require any special running in when new. You can use it at full power from the start but you must never overload it. Avoid using the engine at full power before it reaches an operating temperature of at least 60°C (140°F).

- Every time you start the engine from cold, let it run slowly without load for a few minutes to warm up. This is particularly important with turbo-charged engines.

- Avoid idling the engine for long periods.

- Regularly check for oil leaks.

- To ensure long clutch life, carefully run in the clutch plates. To do this, operate the clutch frequently but gradually during the first 15 hours service.

After the first 50 hours

- Change the engine oil and relative filter cartridge. After this, change the engine oil and engine oil filter at the intervals given in the 'Routine Maintenance Table'.
- Replace the fuel filter twice during the first 100 hours service (after 50 hours and after 100 hours). After this, replace the fuel filter at the intervals specified in the 'Routine Maintenance Table'.
- Hydraulic circuits: replace the filter on the intake of the steering and power lift circuit pumps, then replace them after every 250 hours service.
- Replace the filter on the delivery of the steering circuit, then replace it every 250 hours service.
- For Powershuttle only. Replace the Powershuttle filter, then repace it every 250 hours service.
- Check clutch pedal travel in the mechanical version.
- Check the brake pedal travel.
- Check all oil levels. If necessary, top up with oil of the prescribed type.
- Check the tension of the fan belt.
- Grease all points with grease nipples.
- Check to make sure that all bolts, screws and nuts are correctly torqued.
- Check the tyre pressures.

How to prevent pollution

To prevent pollution when oil, filters and so forth are changed, always clean the zone around fill, level and drain plugs, dipsticks and filters. Before connecting the auxiliary cylinders, make sure that the oil they contain is clean, that it has not deteriorated owing to long storage and that it is of the prescribed type.

Servicing intervals

The intervals suggested in the lubrication and maintenance table are indications to use when the tractor is used in normal conditions.

These intervals should be adapted to the real environmental and operational conditions. Servicing must be more frequent in adverse work conditions (in the presence of humidity, mud, sand, very dusty environments).

***WARNING:** After the first 50 hours service, change the engine oil (operation N° 24) and the relative filter (operation N° 25), the oil filter cartridge of the transmission, power lift and steering circuit (operation N° 26-27) and the fuel filter (operation N° 29).*

***CAUTION:** If carried out at the prescribed intervals, the operations described in this section will ensure that the tractor operates in a regular way. However, remember to carry out the inspections and adjustments (of variable frequency depending on the environmental conditions and type of work carried out) according to your discretion and experience.*

Miscellaneous inspections

Periodically check the following components. If faults are discovered, contact your Dealer's specialized personnel and have the damaged parts replaced if necessary :

- Hydraulic hoses: the hoses must not be squeezed or cracked. The outer sheath must not be swollen. There must be no oil leaks between the hoses and their unions.
- Hand brake lever: make sure that the ratchet locking mechanism is secure and reliable.
- Make sure that all nuts are well tightened;
- Make sure that the safety frame bolts are well tightened.
- Make sure that all other nuts and bolts are well tightened.

Indicator lights

Your tractor is equipped with indicator lights that keep you informed about the condition of your machine. Some of these indicate faults, so act promptly if they come on.

Fuel Injection Pump

Only *your Dealer's specialized personnel* may be allowed to work on the injection pump during the warranty period. Removal of the seals from the pump will relieve the *manufacturer* from all and every liability in relation to warranty coverage.

Keeping the Environment Clean

When you need to fill the fuel tank or change the lubricating oil, never forget to position a vessel under the component in question in order to collect any fuel or oil that spills out. These products are polluting, so it is very important to protect the environment in this way.

Engine Cooling System

It is advisable to replace the fluid in the system at least once a year even if you have not reached 1000 hours service in total.

Radiator

To ensure that the cooling circuit operates in a perfect way, it is important to prevent the radiator fins from becoming clogged.
These fins should be cleaned often, even several times a day if the place of work is particularly dusty.

Lubrication

Before lubricating any parts provided with grease nipples, carefully clean the fittings surfaces and be sure that their seal ball moves freely.
After the lubrication, remove any trace of grease to avoid collecting dirt or dust.

Fuel tank filling

CAUTION: *Comply with the following instructions when working with diesel fuel. Do not smoke near diesel fuel. In no case must petrol (gasoline), alcohol or mixtures of diesel fuel or alcohol be added to the diesel fuel as such action would notably increase the risk of fire outbreaks or explosions. In a closed vessel, such as a can, they are even more explosive than pure petrol (gasoline).*

Never use such mixtures. Moreover, mixtures of diesel fuel and alcohol are not approved since the resulting lubrication of the fuel injection system is insufficient.

Clean around the plug where the fuel is poured and keep it clean.

Fill the tank at the end of the day to prevent the formation of overnight condensation.

Never remove the plug or fuel the tractor whilst the engine is running. Keep control of the pump nozzle whilst the tank is being filled.

The tank must not be completely filled. Allow space for an increase in volume. If the original tank plug is lost, it must be replaced with an original spare which must be fully tightened.

Dry up any fuel spill immediately.

Fuel requisites

It is important to use good quality fuel if the engine is to be long-lasting and give a good performance. The fuels must be clean, well refined and non-corrosive for the fuel system components. Make sure that you use fuel of a known quality and reliable origin.

Fuelling

Before you fuel the tractor, clean the zone around the fill plug to prevent foreign bodies from entering the tank. After fuelling, screw on the plug and tighten it well.

Fuel storage

Take all the necessary precautions to ensure that stored fuel does not become polluted with dirt, water or other substances.

- Store fuel in black iron cans. Do not store it in galvanized cans as the galvanizing treatment would react with the fuel and form compounds that would spoil the injection pump and injectors.
- Store fuel cans away from direct sunlight and slightly tilted, so that any sediment inside is eliminated through the outlet tube.
- To make sludge and condensation water easier to remove, there should be a discharge plug in the lowest point, on the opposite side to the drain tube.
- If the fuel is not filtered from the storage can, use a funnel with a fine gauze mesh over the tank fill plug inlet when fuelling.
- Plan your fuel purchases so that summer fuels are not kept for too long and used in the winter.

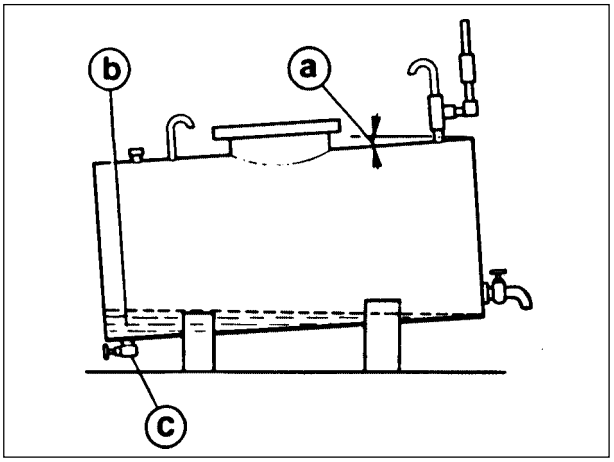

Fig.5-1 Setting up a tank for fuel storage and decanting.
a. Slope 25%.
b. Condensation water.
c. Sludge drain plug.

NOTE: *Do not use galvanized containers.*

Fuelling Fig. 5-2

WARNING: Do not smoke while filling the fuel tank. Keep clear of any sort of flames.

The filler on the fuel tank (1 - Fig.5-2b) is provided with a wire mesh filter (2) that can be removed for cleaning.

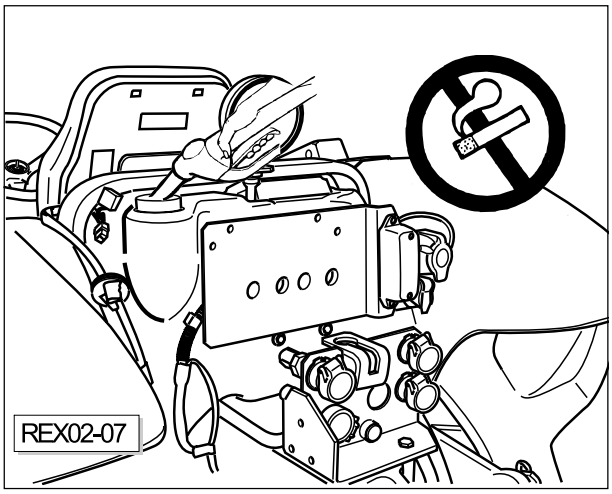

Fig.5-2a

Accessing for inspection and maintenance

Foreword

It may be necessary to open the bonnet (Fig. 5-3) in order to access the engine components and carry out inspections, lubrication and servicing operations.
The required procedures are illustrated below.

How to open the bonnet (Fig. 5-3)

The bonnet (1) can be easily tilted up for maintenance operations on the engine .
Pull the handle (2) on the right-hand side of the tractor to open the bonnet.

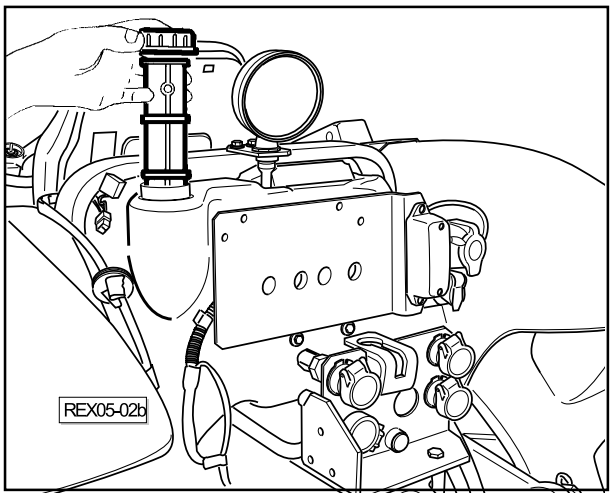

Fig.5-2b

How to remove the side panels (Fig.5-3)

The side panels (3) can be easily removed for maintenance operations on the engine .
Loosen the front fixing pin (4) and pull the panel forward to remove it.

To mount the panel again, align its rear edge with the cab and fit the rear fixing pin. Then fit and tighten the front fixing pin (4).

WARNING: NEVER use the tractor without the bonnet and side panels.

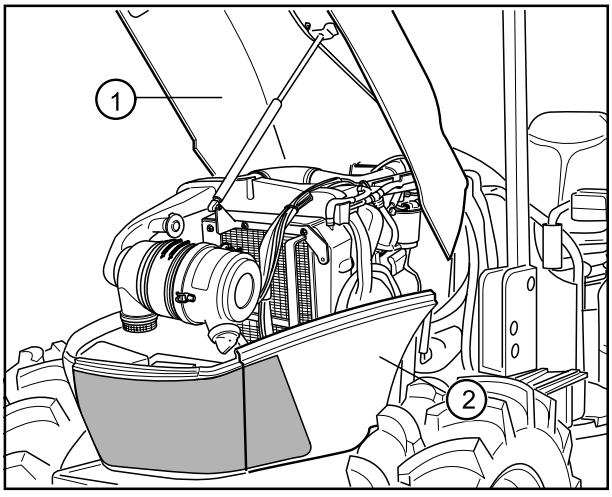

Fig.5-3

VARIABLE MAINTENANCE

WARNING: *Use your own discretion and experience when deciding the actual timing for variable interval service and maintenance operations. It is obviously better to carry out these operations too often than not often enough.*

OPERATION 1
Engine oil level
Fig. 5-4

Leave the tractor parked on a flat surface for at least five minutes before checking the level, to allow the oil to settle in the sump:

- take out the dipstick (2), wipe it with a rag and then dip it into the filler again;

- wait 10—15 minutes, then remove the dipstick again and make sure that the oil level reaches and does not exceed the level marked on it.

- If necessary, pour additional oil through the filler (1) until the required level has been reached.

CAUTION: *Never ever use the engine with the oil level below the "MIN" mark.*

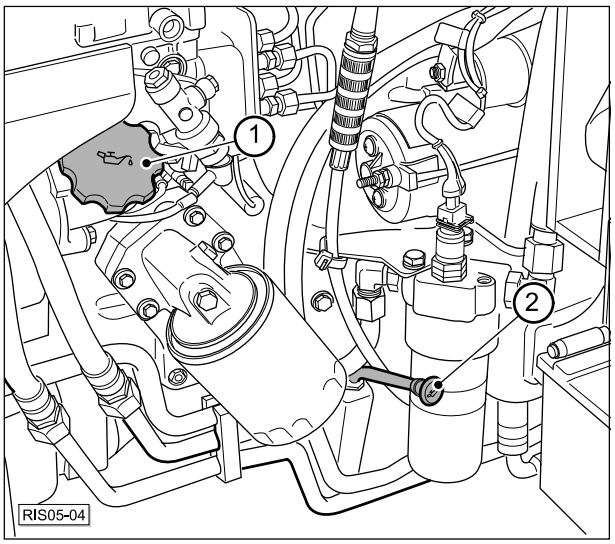

Fig.5-4 - Engine oil

OPERATION 2
Oil level: mechanical transmission, power lift circuit and steering circuit (Fig. 5-5)

Check at regular intervals the oil level in the mechanical transmission and in the power lift and steering circuits.

Park the tractor on flat ground, stop the engine and lower the power lift links. Remove the dipstick (1) and check the oil level .

NOTE: *Allow the oil to settle in the transmission and rear final drives before checking the level.*

The oil level in the transmission must be over the midline, between the minimum and maximum marks of the dipstick (Fig. 5-5) with the lift links in the up position. If needed, fill up through the filler (1) to the required level with oil of the prescribed type.

To bleed air from the circuits when filling up the transmission, remove the plug on the PTO hydraulic clutch housing (2 - Fig.5-5) or on the transmission housing (2 - Fig.5-5b) for the mechanical version.

When operating external hydraulics, such as hydraulic front loaders, rams, motors etc. that require a certain amount of oil, top up the oil level to the B mark on the dipstick (corresponding to about 10 litres). This ensures a correct oil level in the transmission at any time.

NOTE: *The level must never be under the Min. mark. When using external hydraulics, the level must always be between the Min. and Max. marks.*

NOTE: *When working with the tractor on slopes, add 5 extra litres of oil to guarantee a minimum oil level even in the most difficult conditions.*

NOTE: *The hydraulic rams of the implements being hitched to the tractor contain the same oil used in the transmission of the tractor. This excludes any oil contamination that could cause malfunction.*

Oil in the gearbox

The tractor's transmission and the steering and power lift circuits contain the same type of oil. See Lubricant and Fuel Chart.

NOTE: *The Powershuttle contains a different oil from the mechanical transmission. The two types of oil must NEVER be mixed together.*

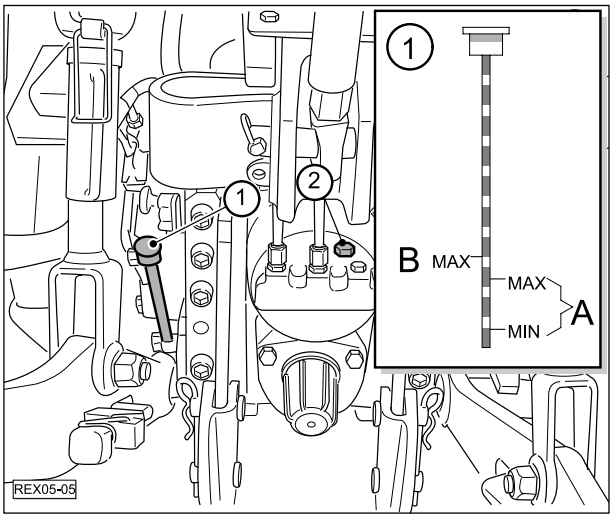

Fig. 5-5.
1. Dipstick and transmission oil filler
A: Normal level marks
Min. - no oil consumption
Max. - max. consumption 5 litres
B: Level to be maintained if using a front loader or other hydraulic implements
2. Air bleeding plug, version with hydraulic PTO

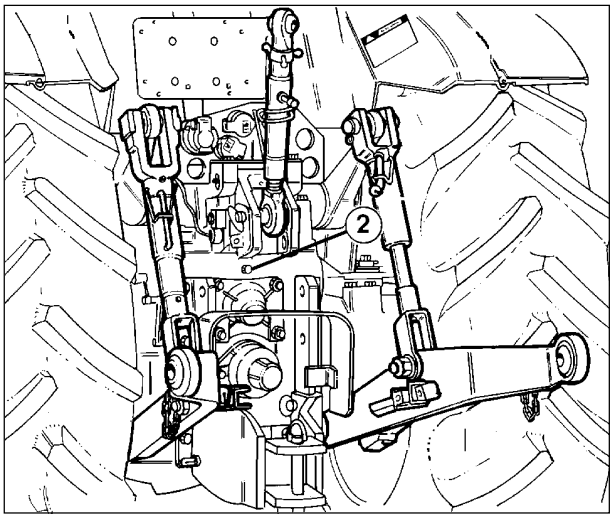

Fig. 5-5b. Air bleeding plug (2), version with mechanical PTO

OPERATION 3
Battery Fig. 5-6

It is advisable to periodically check the level of battery acid and to add distilled water if necessary. If you need to top up more frequently, have the battery charging system checked by a qualified technician.

***WARNING:** Battery electrolyte contains sulphuric acid and can cause serious burns. Avoid contact with the skin and eyes. Keep naked flames, sparks and lighted cigarettes well clear of batteries which are being charged. Keep the area in which batteries are being charged well ventilated.*

***WARNING:** When connecting the battery to a charger, make sure that the positive (+) lead of the charger is connected to the positive of the battery and the negative (-) to the negative. Incorrect connection will damage the diodes and the other circuit components.*

NOTE: *The level of the electrolyte must be checked with the engine off, the tractor parked on flat ground and the battery cold.*

NOTE: *Make sure that the battery terminal nuts are well fixed to their terminals.*

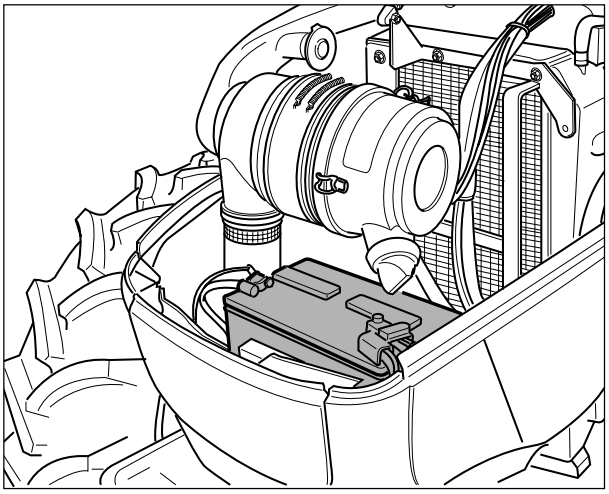

Fig.5-6 Battery

Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm.
Wash hands after

OPERATION 4
Fuel filter Fig. 5-7

Regularly drain off the water that collects in the filter bowl through the valves (1) of the filters (2).
This operation must be carried out with the engine on.

Replace the filter for the first two times every 100 hours (at 50 and 100 hours) during the running-in period.
After this, replace the fuel filter after every 500 hours service.

In this type of engines, the fuel system is generally bled automatically.
However, when the filters are removed, you may need to completely bleed the system.

For a complete bleeding of the fuel system, see "Fuel bleeding" in the Maintenance section.

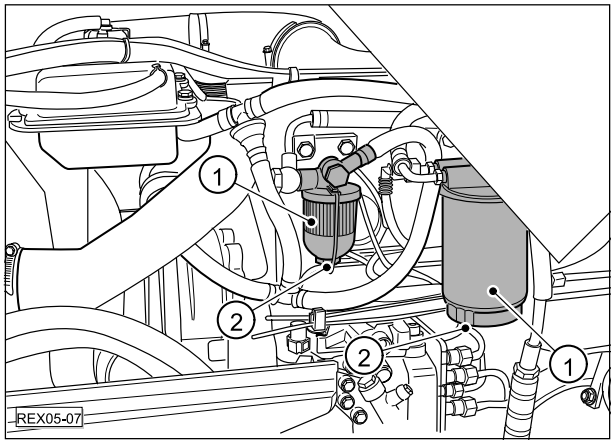

Fig.5-7

OPERATION 5
Cooling circuit expansion reservoir Fig. 5-8

Periodically check the level in the reservoir (2).
Top up through the plug if necessary (1).

***WARNING:** NEVER remove the plug from the reservoir while the engine is still hot. Always unscrew the plug slowly by one position and allow the pressure to drop before you loosen it completely.*

Precautions against freezing temperatures
To prevent ice from forming in the radiator, add specific products according to the instructions given by the antifreeze manufacturer.
Antifreeze also possesses antioxidant and rust-inhibiting properties and is suitable for all seasons.

Degrees C°	- 8°	- 15°	- 25°	- 35°
Percentage of antifreeze per volume %	20	30	40	50

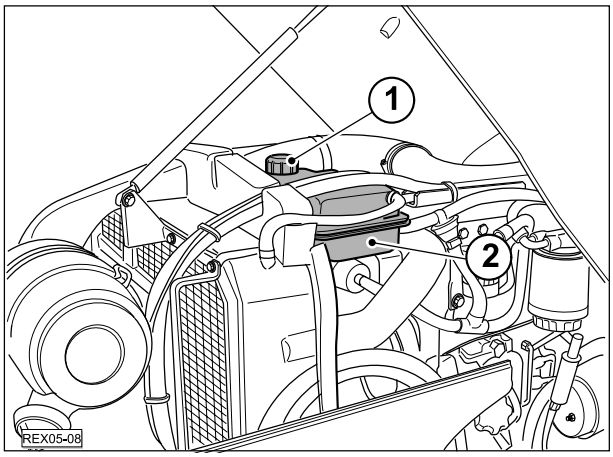

Fig.5-8

OPERATION 6
Engine coolant radiator

Periodically check to make sure that the radiator (2 - Fig. 5-9) is not clogged. Clean with a jet of compressed air directed from the inside towards the outside.

***WARNING:** These operations must be carried out when the engine is cold. When hot, the grilles and radiator will burn the hands and fingers.*

NOTE: *The best results are obtained with a steam cleaner that softens up the dirt. Use a lamp to check the cleaning between the radiator fins. We recommend a daily cleaning when front implements are used, especially front mower-conditioners.*

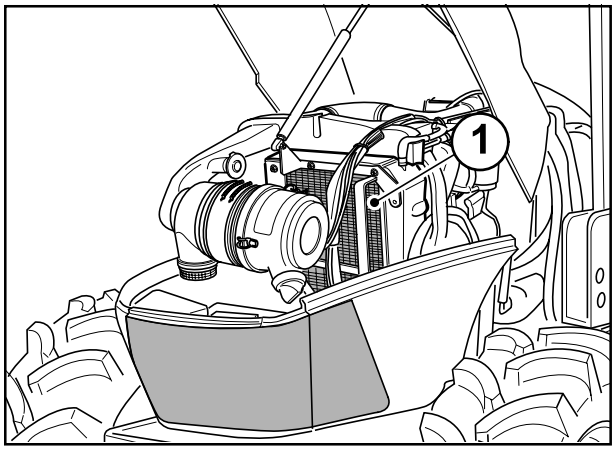

Fig.5-9

OPERATION 7
Transmission oil radiator

Periodically clean the surface of the radiator with a blast of compressed air (2 - Fig. 5-9a)

With air conditioning radiator

Loosen the fixing pin (3) and remove the air conditioning condenser (1) to make cleaning of the cooling radiator (1) and of the transmission oil radiator (2) easier (Operation 8).

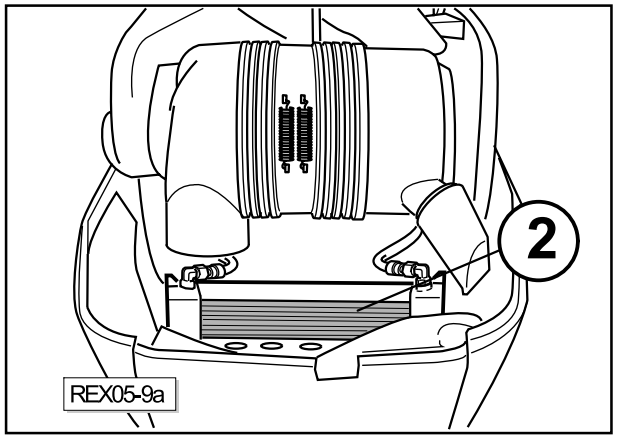

Fig.5-9a

OPERATION 8
Air conditioning condenser (cab version)

Regularly check the system to keep it in a good condition and use compressed air to remove any dust and dirt from and around the condenser fins.
To access to the condenser (1 - Fig. 5-10), remove the two side panels from the engine.

Loosen the pin (2 - Fig. 5-10) and remove the condenser (1 - Fig. 5-10), then blow compressed air at a max. pressure of 7 bar (98 psi), in the opposite direction to that of the normal air flow.

WARNING: Never disconnect any pipes or hoses in the air conditioning system to reach the condenser.

WARNING: If the tractor is to remain unused for a long period of time, or if the system is not used, remember to allow the air conditioner to operate for about 15 minutes each week. This precautionary measure prevents gas from leaking from the compressor.

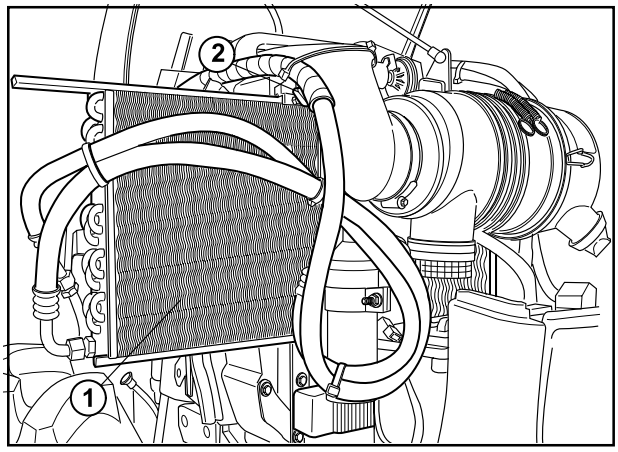

Fig.5-10

OPERATION 9
Air filter discharge valve Fig. 5-11

Discharge the dust deposits and sediments each day by pressing the rubber valve (2) on the air filter housing (1).

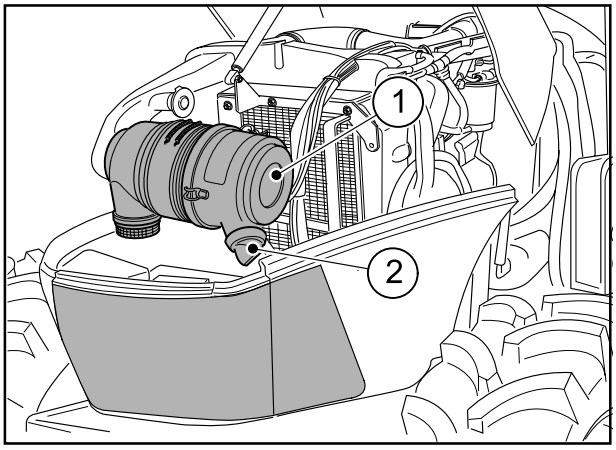

Fig.5-11

OPERATION 10
External cartridge of dry air filter Fig. 5-12

***WARNING:** Always stop the engine before demounting the filter elements.*

Periodically release the clips, remove the cover (2), take out the external cartridge (3) and clean it (this operation should be carried out more frequently if you work in a very dusty environment):

- with a jet of compressed air at a pressure of no more than 5.9 bar (6 Kg/cm2), directed towards the outside of the filter cartridge (Fig.5-13);

or:

- with water and non-foaming detergent. After cleaning, rinse the filter cartridge with a jet of water at a pressure not higher than 2.9 bar (3 Kg/cm2) and dry it with dry air at a temperature of no more than 50°C.

Never ever clean the cartridge with products other than those indicated above, or by tapping it on a hard surface.

Thoroughly clean all the internal parts of the housing (1) with a damp cloth before remounting.

Replace the external element after three cleaning operations and at least once a year or after every 1000 hours service.

Replace the internal secondary element (4) once a year or after three cleanings of the outer element.

Always check to make sure that the filter housing is not damaged and make sure that all the pipes and unions are tight.

***WARNING:** The internal filter element must not be replaced. NEVER attempt to clean the internal safety element.*

***WARNING:** NEVER attempt to clean the filter elements with exhaust gas from the engine. NEVER EVER use oil on a dry filter. NEVER EVER use wash oil, diesel fuel, paraffin or solvents to clean the filter elements.*

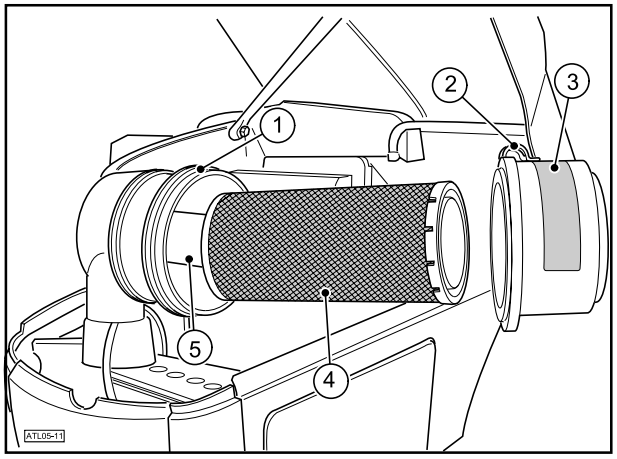

Fig.5-12

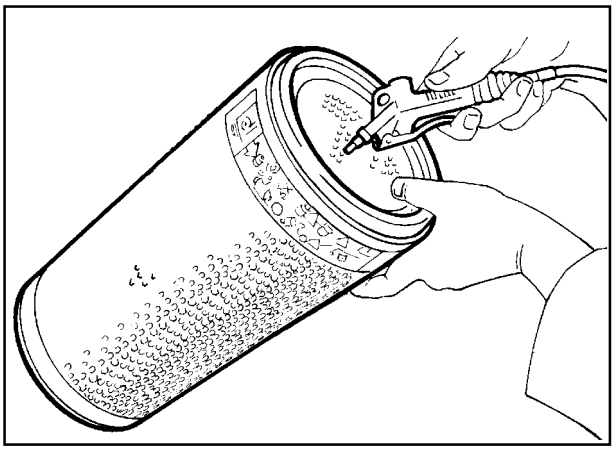
Fig.5-13 - Cleaning the filter by compressed air (max. pressure 4 bar).

OPERATION 11
Alternator and fan belt
Fig. 5-14

Periodically check the tension A of the alternator and fan belt in the middle of its long side. It should give 10 - 15 mm.

To adjust the belt tension, loosen the fixing screws and check nut (1) on the idler and move the alternator until the correct tension has been obtained. Now tighten all the screws and check nuts.
Also check the tension on the air conditioning compressor, operation 12.

NOTE: *Check the belt tension frequently. The belt must be replaced if it is cracked or needs to be frequently adjusted. This operation must be carried out by authorized service personnel.*

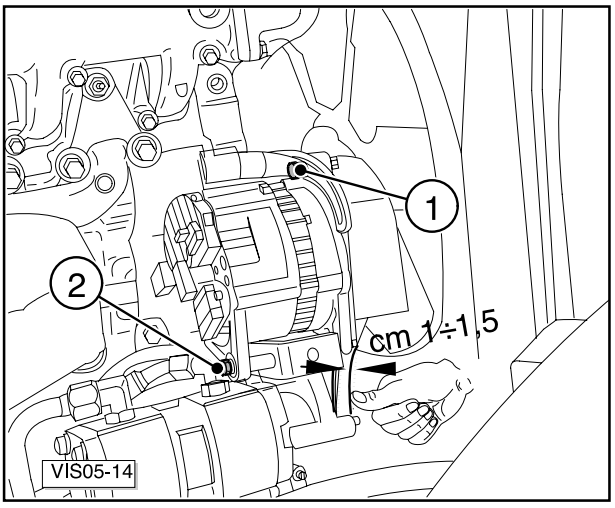

Fig.5-14

OPERATION 12
Compressor drive belt - Fig. 5-15

Regularly check the tension of the A/C compressor drive belt and adjust (1) in the following way if necessary (Fig. 5-15).

1 - Loosen the fixing nuts (2).

2 - Move the idler (3) until the belt (4) gives about 15 mm when pressed in the middle of the longest side.

3 - Tighten all the nuts (2).

4 - Also make sure that the alternator-fan belt is correctly adjusted (operation 11.

***WARNING:** Always check and adjust the fan and alternator belt first, and the compressor drive belt second .*

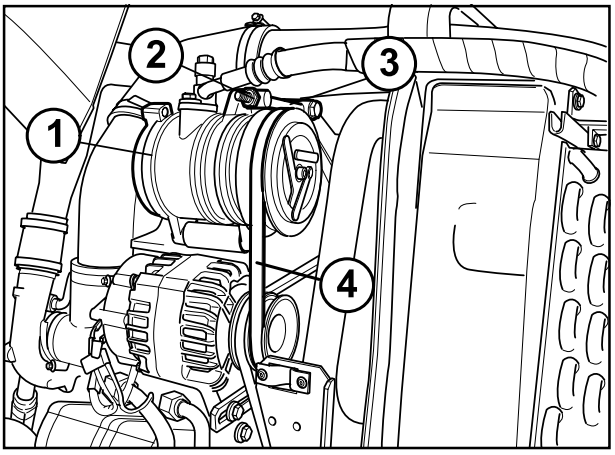

Fig.5-15 - Checking and adjusting the compressor drive belt.

OPERATION 13
Mechanical gearshift clutch pedal Fig. 5-16

If you note that clutch pedal (1) operation becomes spongy or if the clutch slips, check that the idle travel A of the pedal is between 15 and 25 mm. If necessary, adjust the travel in the following way:

- Loosen the check nut (2);
- Disconnect the adjuster fork (1) and tighten it or loosen it to obtain the correct travel A;
- Lock the check nut.

NOTE: *The electro-hydraulic clutch of tractors with electro-hydraulic reverse shuttle needs no adjustment.*

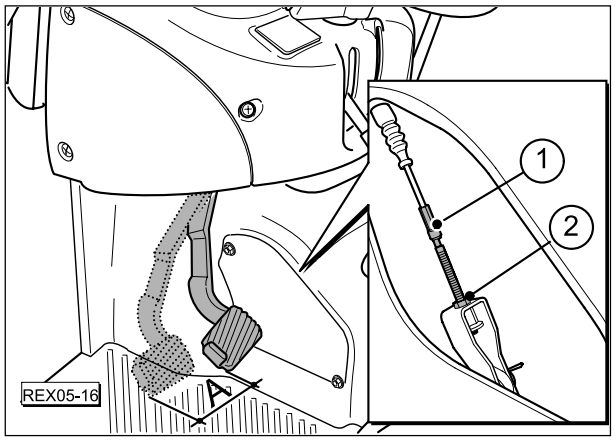

Fig.5-16 Adjusting the clutch pedal travel. Pedal travel A= 1.5 to 2.5 cm

OPERATION 14
Engine - Mechanical PTO clutch adjustment Fig.5-17

Check at suitable intervals the lever adjustment. It must have a free travel of 4 to 5 cm. For the adjustment, loosen the jam nut (2) and screw or unscrew the adjustment fork (1) on the control rod.
Lock the jam nut (2) again.

The mechanical clutch is hydraulically controlled and needs no adjustment. Consult your dealer if necessary.

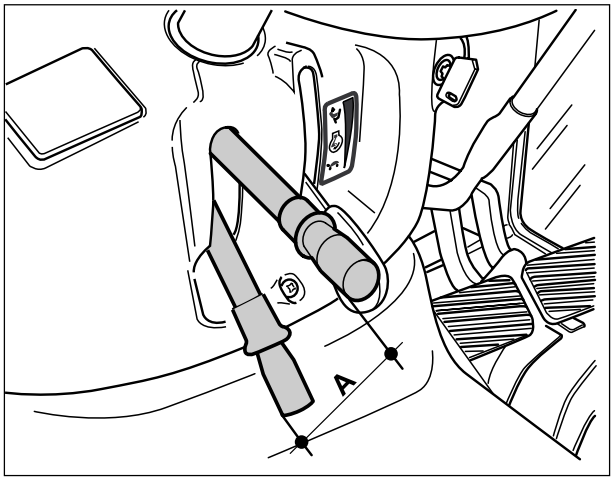

Fig.5-17 - Check and adjustment of the free travel "A" (3,5-4 cm.) of the mechanical PTO disengagement lever.

OPERATION 15
Brake fluid reservoir

At suitable intervals, check the level of the fluid in the brake reservoir. The reservoir (1 - Fig. 5-18) must always be kept full. Top up only with the correct brake fluid, as indicated in the Lubricants and Fuels chart. An indicator light in the instrument panel (Fig.3-3) comes on whenever the fluid level is too low; in this case top up to the required level.

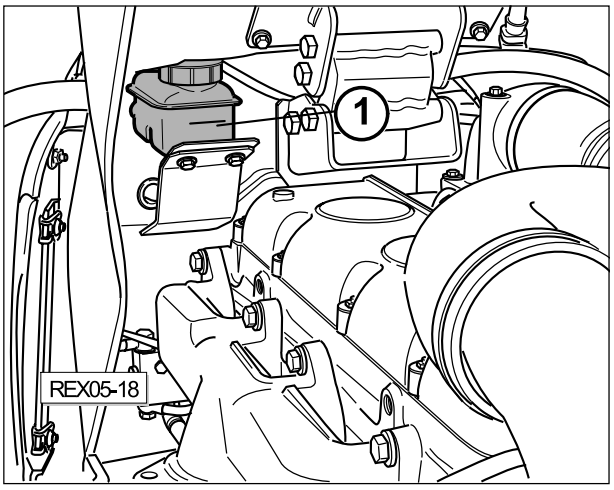

Fig.5-18 - Brake fluid reservoir(1)

Bleeding air from the rear brake circuit

It becomes necessary to bleed the circuit when air enters owing to lack of oil in the relative reservoir or when the braking system is serviced.
This operation should be carried out by specialized personnel. If, however, you decide to do it yourself, proceed as described in the General Maintenance section.

***WARNING:** When changing and topping up the fluid in the brake reservoir (1 - Fig. 5-18), be absolutely sure to use the correct type of fluid as different varieties have totally different properties. These machines use a mineral-based. Never mix or exchange these two types of brake fluid as this could rapidly bring about brake failure.*

OPERATION 16
Adjusting the brakes

Rear brakes

Adjust the brakes for the first time after the first 50 hours, then according to the work conditions.

The braking system must be adjusted when the free travel of the pedals (A - Fig. 5-19) becomes excessive and the pedals are near to end of travel.
Proceed in the following way to restore free pedal travel to its normal value of about 3.5 cm (1.4 in.) (dimension A):

1 - First make sure that there is no air in the hydraulic brake circuit. Bleed if necessary. (The presence of air in the circuit is normally denoted by a spongy braking action).

2 - Jack up the rear wheels of the tractor.

3 - Make sure that the parking brake is off.

4 - Free the brake pedals by raising the lock.

5 - Unscrew the check nut (1 - Fig. 5-21). Slowly tighten the adjuster nut (2 - Fig. 5-21) until you can no longer turn the wheel by hand.

6 - Make a reference mark on the adjuster nut (2 - Fig. 5-20) and on the support, then slacken off the adjuster nut by 1 and 1/4ths of a turn, i.e. until the wheel can be freely turned. Now lock the adjuster with the relative check nut (1 - Fig. 5-21).

7 - Check that the brake pedal has a free travel of 3.5 cm (1.4 in.) and repeat the adjustment if necessary.

8 - Repeat the procedure for the other side (Fig. 5-22). Finally, check that the free travel is the same for both pedals and that the brakes engage simultaneously on both sides.

9 - Check that the parking brake lever has not been affected and adjust if necessary (Operation 17).

Front brakes

No periodic adjustment is required as the front brakes are self-regulating.

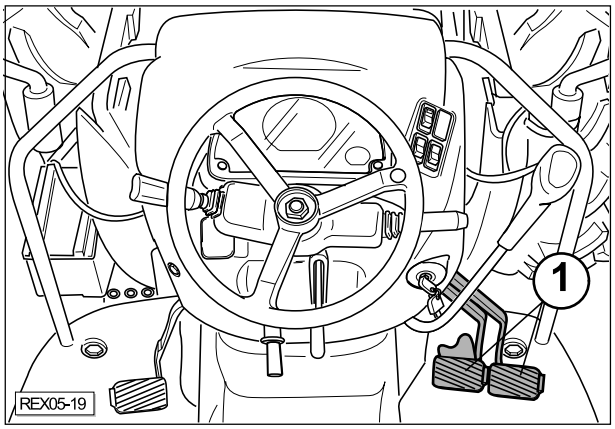

Fig.5-19 - Travel (A) of brake pedals

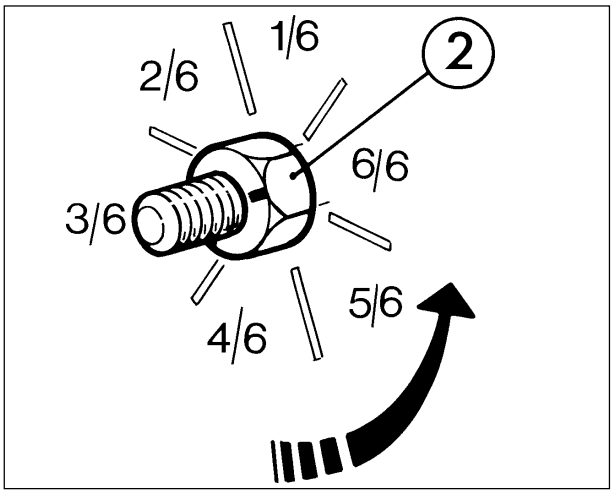

Fig.5-20 - Check nut (2).

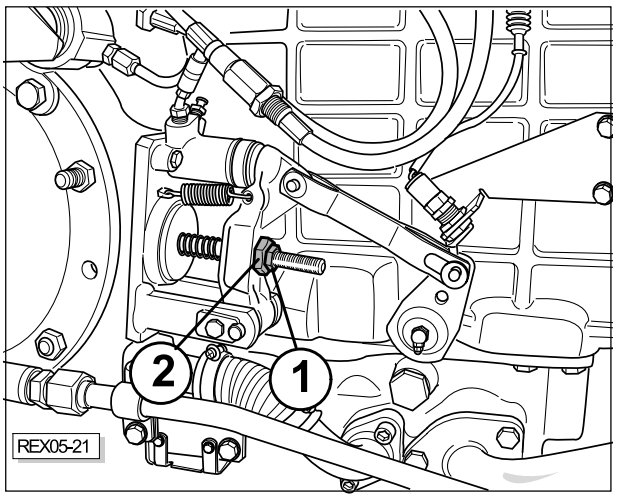

Fig.5-21 - Adjusting the rh brake.
1 - Check nut
2 - Adjuster nut

OPERATION 17
Parking brake - Fig. 5-22a

The parking brake hand lever (1 - Fig.5-22b) is directly linked to the brake pedals.
Make sure that free travel is identical for both pedals, since free travel of the pedals determines the free travel of the parking brake and left/right distribution of the braking action when the brakes are locked.

Once you have adjusted the brake pedals, adjust the free travel of the parking brake by means of the adjuster nut (3 - Fig. 5-22a) on the brake lever, so that the parking brake engages after 2 clicks of the ratchet mechanism, perceived on the release button (2 - Fig.5-22b).

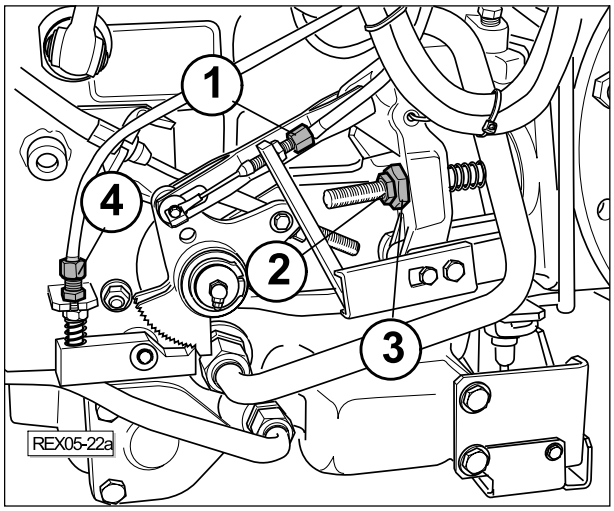

Fig.5-22a - Travel adjustment of the lh brake pedal and parking brake hand lever.
1 - Fixing and adjuster nut of the parking brake.
2 - Rear brake check nut.
3 - Rear brake adjuster nut,
4 - Parking brake disengagement adjuster rod .

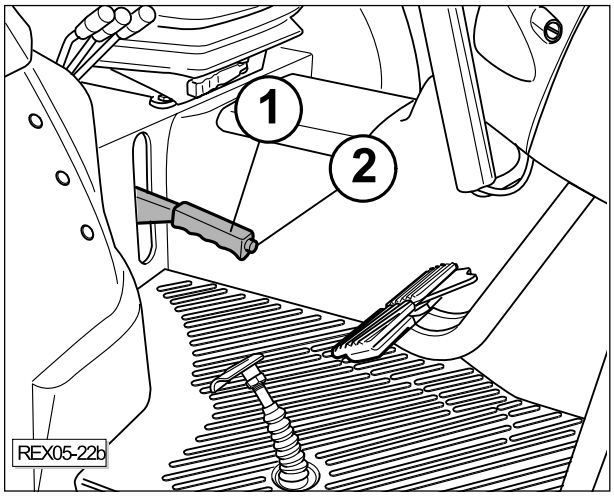

Fig.5-22b

OPERATION 18
Rear final drives
Fig. 5-23

1. Park the tractor on level ground.

2. Position the final drive plugs (1- Fig.5-23) on the wheel center line. Remove the plugs and check the oil level. The oil level is correct if it flows from the hole. Top up if necessary with oil of the specified type through the plugs.

NOTE: *See the Fuel and Lubricant chart for the correct type of oil.*

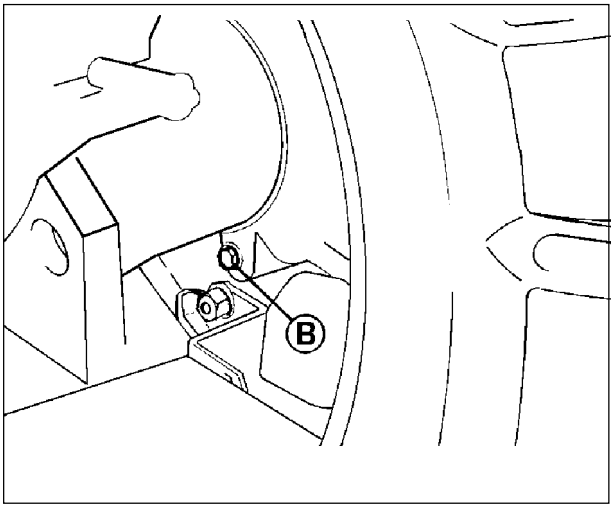

Fig.5-23 - Rear final drives

OPERATION 19
Front axle oil level

4WD front axle

Regularly check the oil level in the differential of the front axle and in the front axle side final drives.

1. Park the tractor on level ground.

2. Position the final drive plugs (1- Fig.5-24) on the wheel center line. Remove the plugs and check the level. Top up if necessary with oil of the specified type through the plugs.

3. Remove the level plug (2 - Fig. 5-25) from the central axle housing. The oil level must reach the hole. Top up if necessary with oil of the specified type through the plug (2 - Fig. 5-25).

NOTE: *See the Fuel and Lubricant chart for the correct type of oil.*

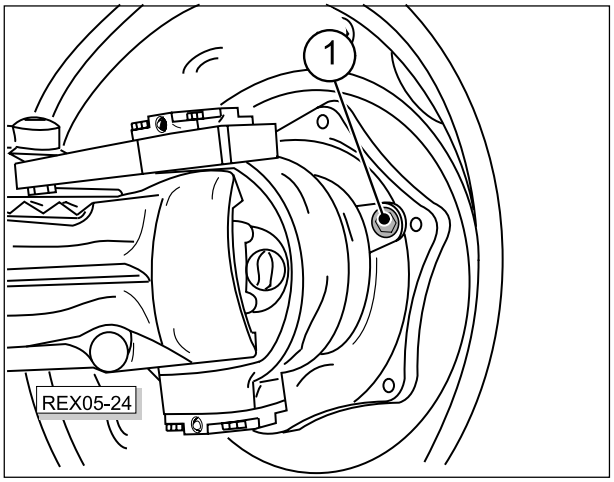

Fig.5-24 - Front axle final drive:
1 - Filler, drain and level plug

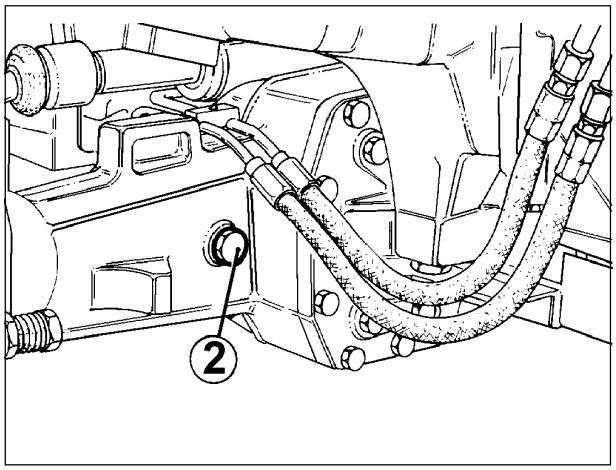

Fig.5-25 - Front axle

OPERATION 20
Miscellaneous inspections

- Power steering cylinder hoses: the tubes must not be crushed or cracked. The outer sheath must not be swollen in any way and there must be no oil leaks between the tubes and unions.
- Hand brake lever: make sure that the ratchet mechanism locks in a secure and stable way.
- Make sure that the wheel nuts are correctly torqued.
- Make sure that the safety frame screws are well tightened.
- Check to make sure that all other nuts and bolts are well tightened.
- Check the tyre pressures.
- Check the fluid level in the window washer reservoir - Cab version.

Safety frame

Have your Dealer's specialized personnel check to make sure that the safety frame fixing screws are correctly tightened.

WARNING: *The safety frame complies with certain safety standards. It must never be drilled or modified in order to install accessories or implements. It is FORBIDDEN to weld on accessories or repair the safety frame by welding.*

EVERY 100 HOURS WORK

OPERATION 21
General lubrication

Lubricate the grease points every 100 hours or more often, depending on the working conditions.

- Grease nipples on brake control cross link, two points (Fig.5-27)
- Three point linkage: 7 grease nipples (Fig.5-28)
- Disengagement collar of the PTO mechanical clutch: inject grease of the prescribed type (max. two pump feeds) every 100 hours of actual PTO operation. (Fig.5-29).
- 4WD drive shaft thrust bearing (Fig.5-30).

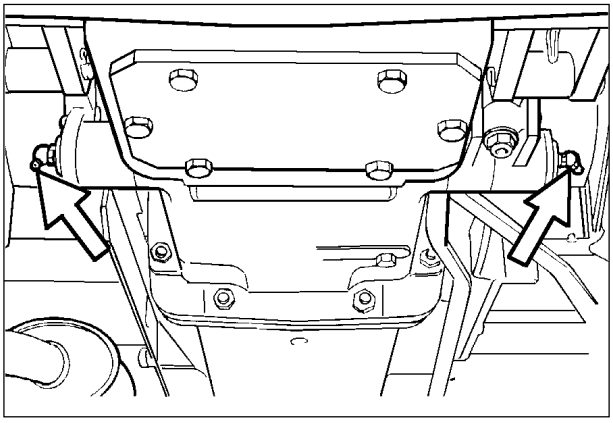

Fig.5-27 Brake control cross link (2 nipples). Inject grease of the prescribed type.

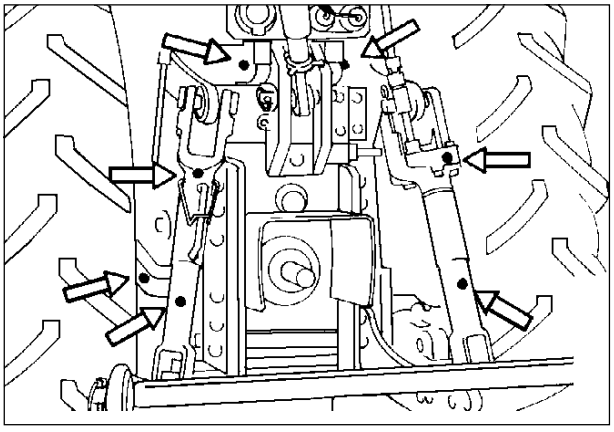

Fig.5-28 - Grease nipples of the three point linkage.

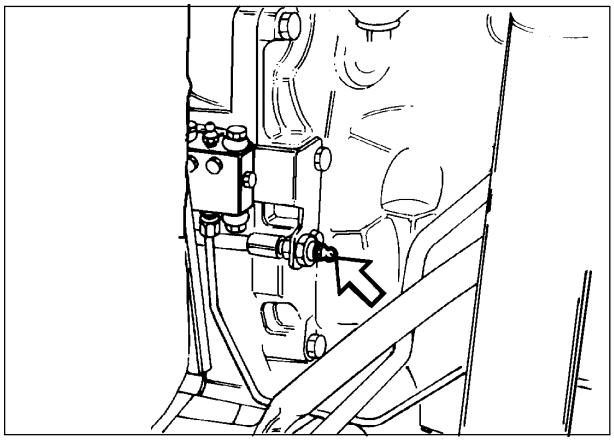

Fig.5-29

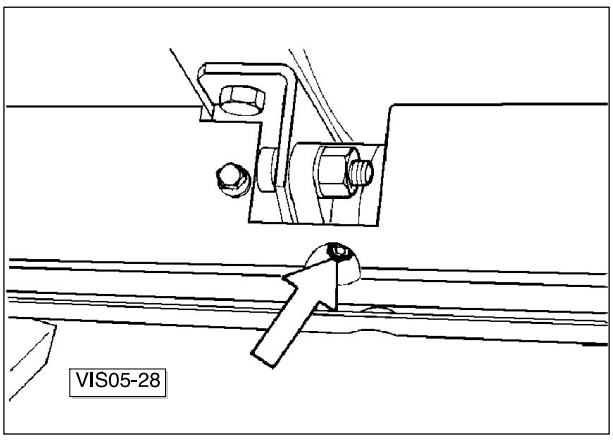

Fig.5-30

OPERATION 22

4WD front axle greasing

Lubricate the following greasing nipples every 100 hours or more frequently, depending on work conditions:

- Kingpins of 4WD axle (2 pcs). (1, Fig.5-31)
- Central pivot bushings of the front axle (1, Fig.5-32)

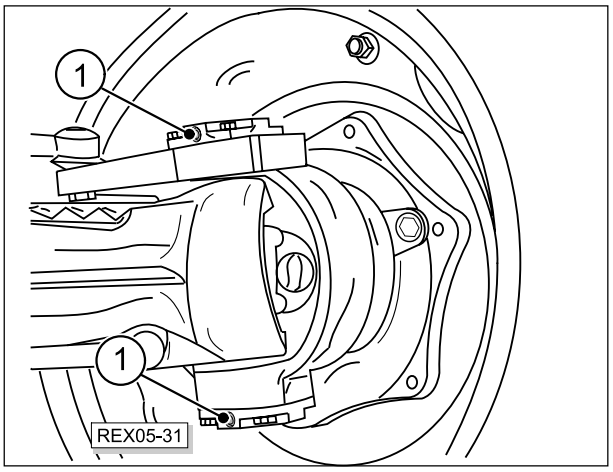

Fig.5-31

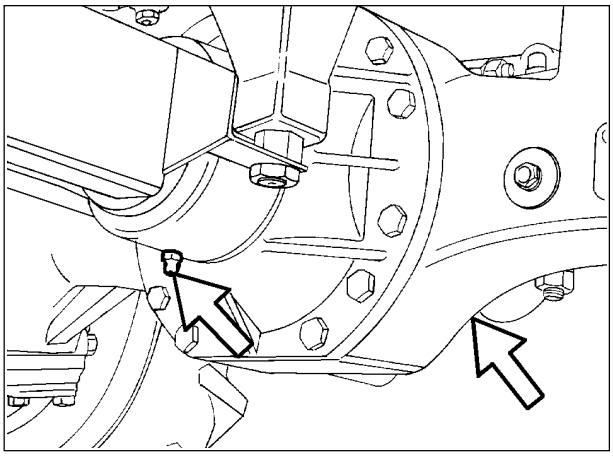

Fig.5-32 - Front axle.
1 - Grease nipple of front pivot bushing of the front axle.

OPERATION 23
2WD front axle

(Optional for some markets only)

Lubricate the following greasing nipples every 100 hours or more frequently, depending on work conditions:

Fig.5-33 Non-driving front axle kingpin (2 nipples). Inject grease of the prescribed type.

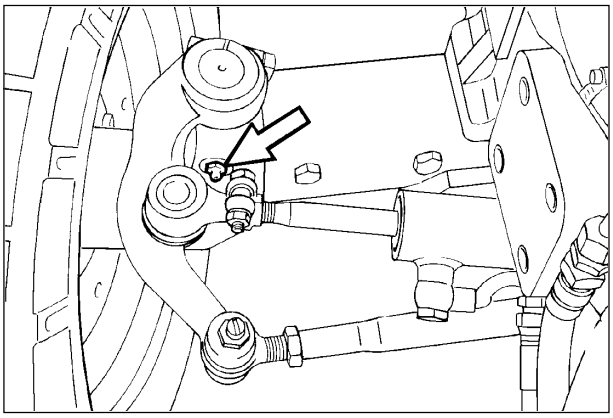

Fig.5-33

Fig.5-34 Non-driving front axle kingpin (2 nipples). Inject grease of the prescribed type.

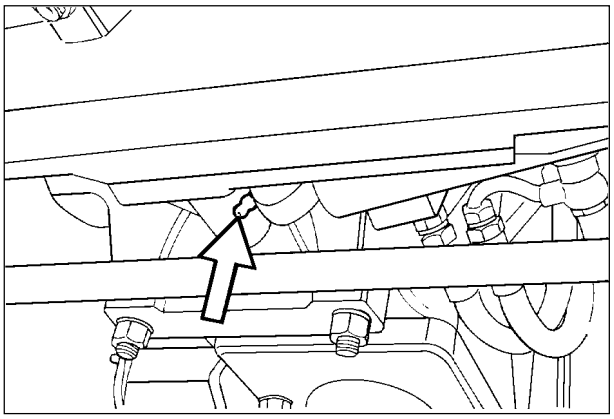

Fig.5-34

EVERY 250 HOURS SERVICE

OPERATION 24
Engine oil sump Fig. 5-35

During the running in period, the engine oil must be changed after the first 50 hours. Following this, change the oil after every 250 hours service (250, 500, 750 hours, etc...)

1. Change the oil whilst the engine is hot.
2. Remove the drain plug (3 - Fig. 5-35) after parking the tractor on a flat surface.
3. Fit the drain plug back on and tighten it (3.5 daNm driving torque).
4. Fill with oil of the recommended type until reaching the maximum level mark on the dipstick (2).

NOTE: *Allow the oil to settle in the engine sump before checking the level. 250 hours is the maximum tolerated frequency for oil changes. The oil must be changed more frequently (e.g. every 125 hours) if the tractor is used in heavy duty conditions).*
If the tractor is used infrequently, change the engine oil at least once a year regardless of the actual number of hours worked.

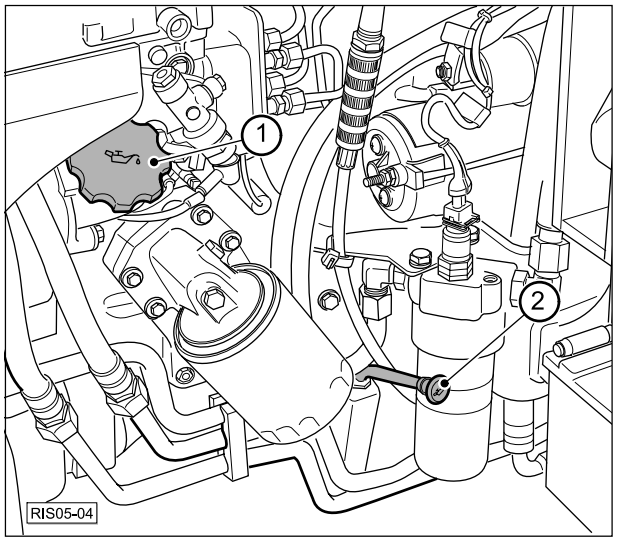

Fig.5-35 - Engine oil

OPERATION 25
Engine oil filter Fig. 5-36

During the running in period, the engine oil must be changed after the first 50 hours. Following this, change the oil after every 250 hours service (250, 500, 750 hours, etc...)

1. Unscrew the old filter (1) from its housing.
2. Smear the housing in which the new filter is to be mounted with clean oil. Make sure that the new filter fits correctly into its housing.
3. Fully tighten the new filter into its housing, then hand tighten a further half turn.
4. Top up the level with new oil (see operation 1).

NOTE: *Consult the lubricant and fuel chart for the type of oil required.*

WARNING: Only use genuine filter cartridges. Use of spurious cartridges could damage the engine and shorten its working life.

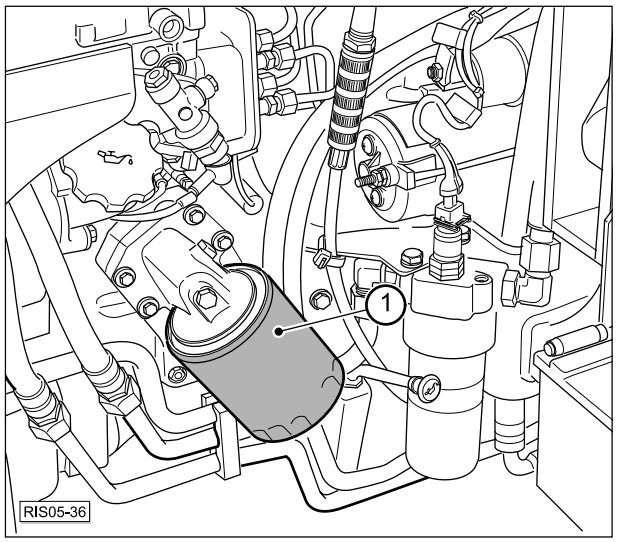

Fig.5-36

Oil filters of the transmission and of the steering and power lift circuits

The operations 25, 26, 27 for the transmission oil filters must be carried out not only at the prescribed intervals, but also whenever the indicator lights on the instrument panel come on.

Warning lights for transmission and hydraulic circuit oil filter blockage (Fig.5-37)

1 - Fixed light: *Red warning light for blockage of the oil filter of transmission and hydraulic circuits . The filter is mounted on the intake part of the hydraulic pumps.*

2 - Fixed light: *Red warning light for low pressure in transmission hydraulic circuit.* A warning buzzer will start operating when this light comes on during work: contact your Dealer's Specialized Workshop if this occurs.

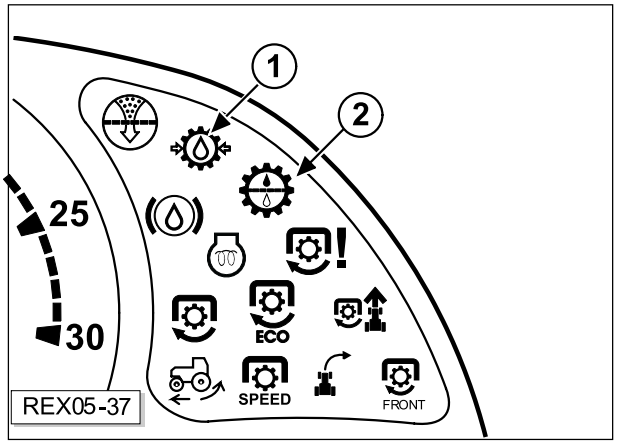

Fig.5-37

OPERATION 26
Oil filter of the transmission, steering and power lift circuit, mounted on the intake part of the hydraulic pumps
Fig. 5-38

***WARNING:** Change the paper filter on the intake part of the hydraulic pumps of the steering and power lift circuits after the first 50 hours. Following this, it should be replaced after every 250 hours service.*

1. Loosen the screws (1) and remove the cover (3) of the intake filter (2).
2. Remove the filter cartridge (2) and wash it in a suitable solvent. Be sure to remove any metallic fragments from the filter cover and housing.
3. Clean and fit the filter cover.
4. Check the oil level. Top up if necessary with oil of the prescribed type.

NOTE: *After changing the filter, allow the engine to run and make sure that there are no leaks. Check the oil level and top up if necessary.*

NOTE: *Use the oil indicated in the Lubricants and Fuels chart.*

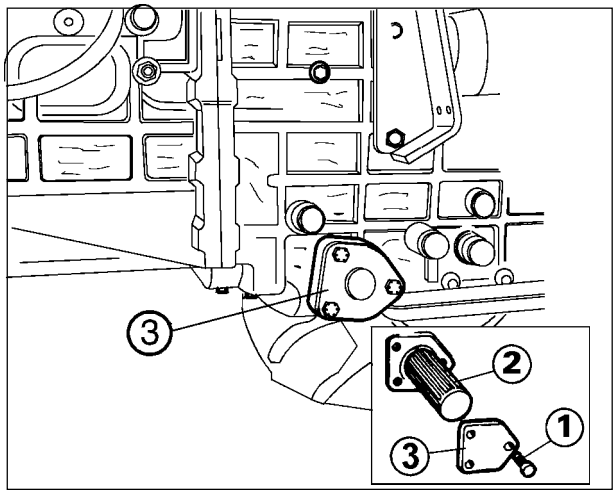

Fig.5-38

NOTE: *Make sure that the hydraulic equipment connected to the tractor's hydraulic circuit uses the same type of oil. Use of different types of oil could damage the hydraulic circuit.*

OPERATION 27
Filter on the delivery (Fig. 5-39) of the steering circuit (and of the Powershuttle circuit, if installed)

***WARNING:** Change the paper filter on the delivery after the first 50 hours service and then after every 250 hours. Also change the filter whenever the red indicator lights on the instrument panel come on (Fig.5-37)*

Change the element of the filter on the delivery of the steering circuit:

1 - Unscrew the holder (1), remove and discard the filter element (3).

2 - Fit the new filter element (3) into the cover of the filter (2).

To prevent the filter element from being dirtied (with mud, etc.) only completely remove the plastic protection after fitting.

3 - Mount the holder (1) after having oiled its threaded part, the washer (4) and seal (5) with clean new oil. Take great care to fit the individual parts in the right directions.

Change the seal (5) and the washer (4) every 1000 hours service or whenever necessary.

4 - Fully screw on the holder (1) by hand.

NOTE: *After changing the oil and filters, run the engine for a while and make sure there are no leaks. Check the oil level again and top up if necessary.*

NOTE: *Use the oil indicated in the Lubricants and Fuels chart.*

NOTE: *Make sure that the hydraulic equipment connected to the tractor's hydraulic circuit uses the same type of oil. Use of different types of oil could damage the hydraulic circuit.*

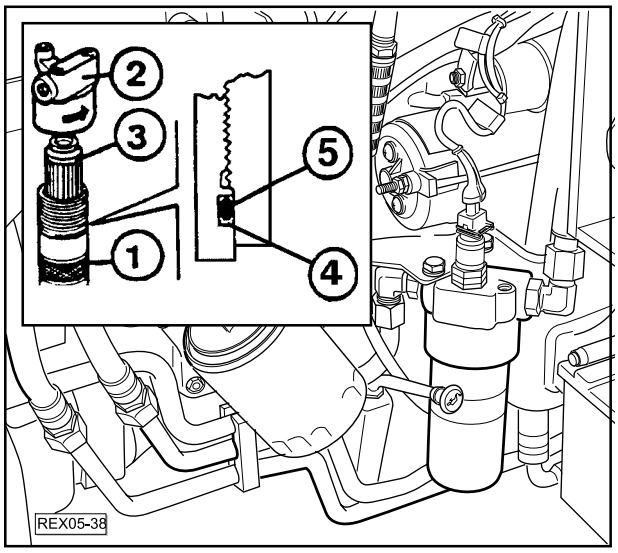

Fig.5-39 - Oil filter of steering, power lift and Powershuttle (if installed) circuits.
1 - Holder.
2 - Cover.
3 - Filter element.
4 - Washer.
5 - Ring seal.

EVERY 500 HOURS SERVICE

OPERATION 28
Engine valves Fig. 5-40

Have the tappet and valve gaps checked by your Dealer's authorized personnel.

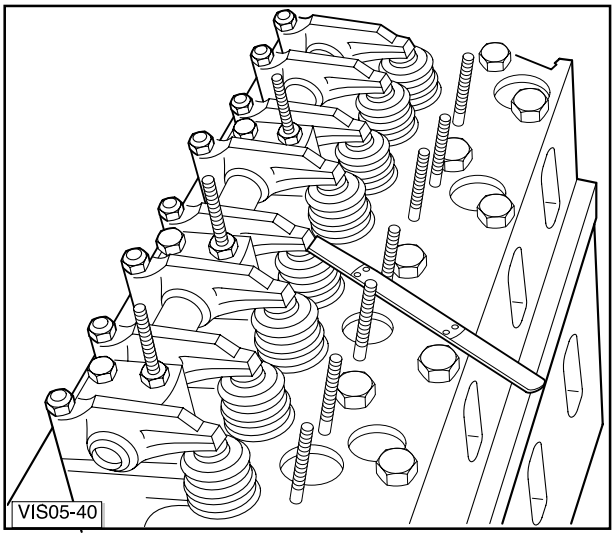

Fig.5-40

OPERATION 29
Fuel filter Fig.5-41

When the engine is running in, during the first 100 hours service, the filters should be changed for the first two times after every 50 hours. After this, change the fuel filter cartridges after every 500 hours service (500,1000, etc.) (Fig. 5-41).

To change the fuel filter
Proceed in the following way (Fig. 5-41):
1 - Clean the outside of the filter.
2 - Open the drain plug (2) at the bottom of the filter to let all fuel out.
3 - Unscrew the filter housing (1). Remove housing and filter element from the filter head.
4 - Press the filter element against the spring and turn it anti-clockwise to release it from the housing.
5 - Put a new filter element into the housing, press it against the spring and turn clockwise to lock it in the housing.
6 - Put a new seal into the housing and smear it with clean fuel.
7 - Check the thread within the element for damage.
8 - Place the filter unit on the filter head and screw down by hand until both parts contact. Tighten by hand of a further 1/4th of a turn, without using any keys.
9 - Close the drain plug (2).
10 -Bleed the fuel circuit if needed. See the General Maintenance chapter.
11 -Start the engine and check for leaks.

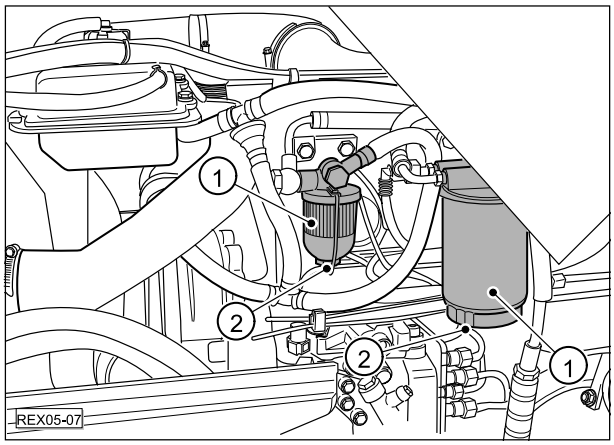

Fig.5-41

In this type of engines, the fuel system is generally bled automatically.
However, when the filters are removed, you may need to completely bleed the system.

For a complete bleeding of the fuel system, see "Fuel bleeding" in the Maintenance section.

***CAUTION:** Do not operate the electric starter motor for more than 20 seconds at a time to avoid overheating the windings.*
If the engine fails to start, wait a while to let the starter motor cool down before trying again.

OPERATION 30
Front wheel hubs for 2WD front axle - Fig. 5-43 (If fitted)

Front wheel hubs: inject grease of the prescribed type by means of a pump (2 grease nipples).

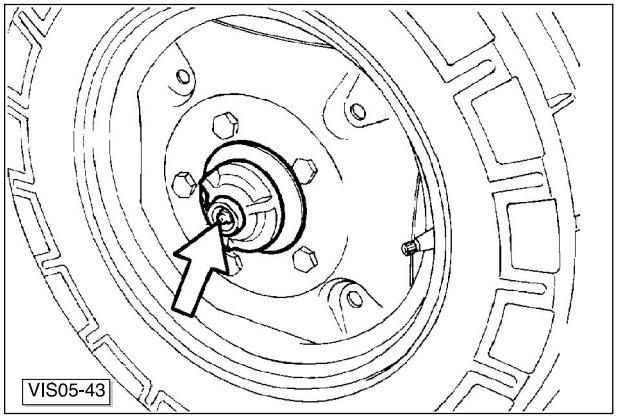

Fig.5-43

OPERATION 30b
Engine breather replacement (for some engines only)

Some engines are provided with a close circuit breather.

The maintenance interval for such breather is 500 hours. The replacement operation should be performed by specialized personnel at your Dealer's.

EVERY 1000 HOURS SERVICE OR ONCE A YEAR

OPERATION 31
Injectors and fuel system Fig. 5-44

Have these checked by your Dealer's specialized personnel.

NOTE: *Thoroughly clean the area in which you must work before loosening or disconnecting any part of the injection system.*

NOTE: *Place covers on all the tubes and injector orifices to prevent dirt from penetrating.*

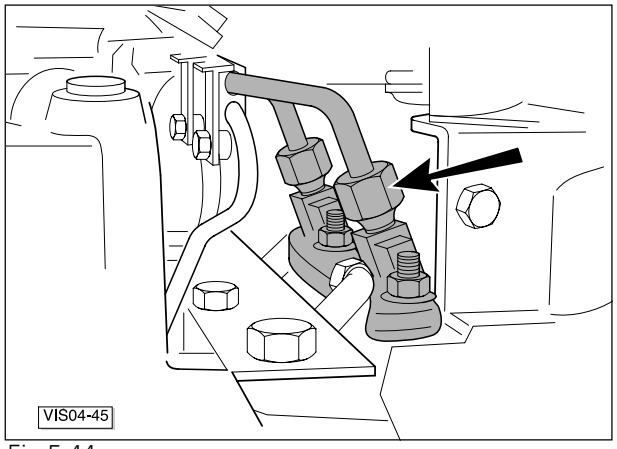

Fig.5-44

OPERATION 32
Oil changes for the transmission, steering circuit and power lift hydraulic circuit
Fig. 5-45a and 5-45b

NOTE: *It is advisable to change the oil for the first time after 500 hours. After this, change the oil after every 1000 hours service.*

Transmission housing Fig.5-45a and 5-45b

1 - Lower the lift arms to the ground.

2 - Remove the plug (see Operation 2).

3 - Place vessels under all seven drain plugs to collect the oil as it drains out.

4 - Remove the plugs and drain out the oil.

5 - Fit the drain plugs back in place, then pour oil of the approved type into the transmission until the correct level has been reached (see Operation 2).

NOTE: *Let the oil stabilize before checking its level.*

WARNING: See the Lubricants and Fuels chart for the type of oil to be used according to the transmission type.

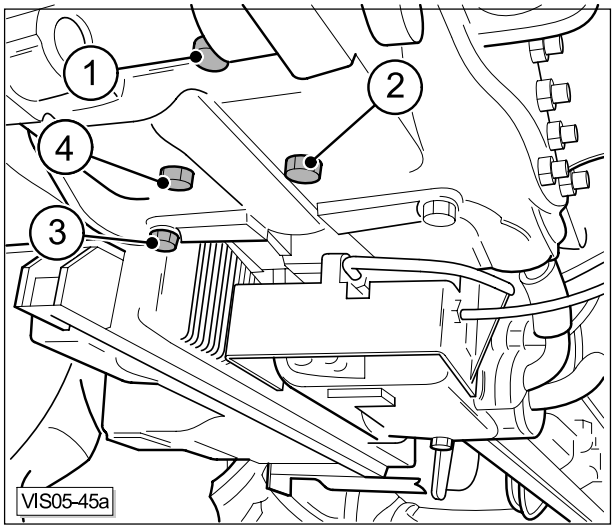

Fig.5-45a

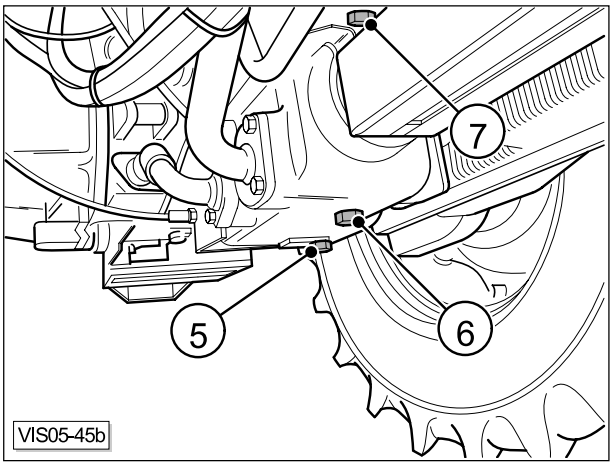

Fig.5-45b

OPERATION 33
Rear final drives

Rear final drives

Oil draining (Fig.5-46)
Position the plugs (1) of the rear final drives downward. Place a vessel under the plugs (1) (one for each final drive). Remove the plugs and drain out oil from the final drives.

Oil filling (Fig.5-47)
Position the plugs (1) on the horizontal wheel centre line and fill with oil of the prescribed type up to the holes. Wait for the oil to stabilize before checking the level. Top up if necessary.
Fit the plugs (1) back.

NOTE: *See the Lubricants and Fuels chart for the correct type of oil.*

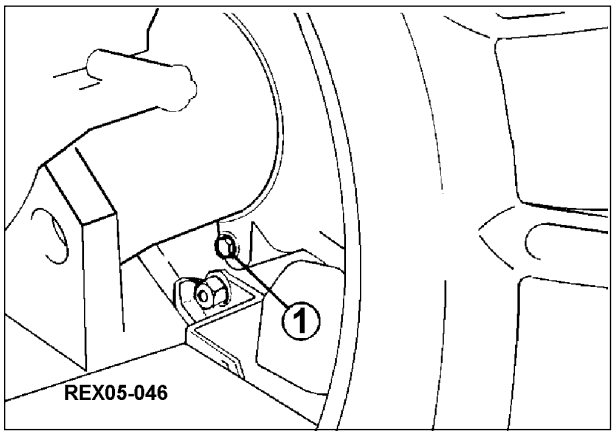

Fig.5-46

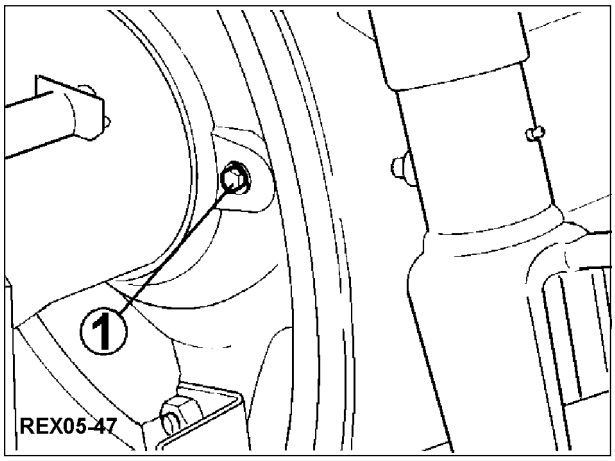

Fig.5-47

OPERATION 34
Steering cylinder knuckle joints

Have the knuckle joint nuts (1) checked by an authorized service center after the first 50 hours and then after every 1000 hours service (Fig. 5-48).

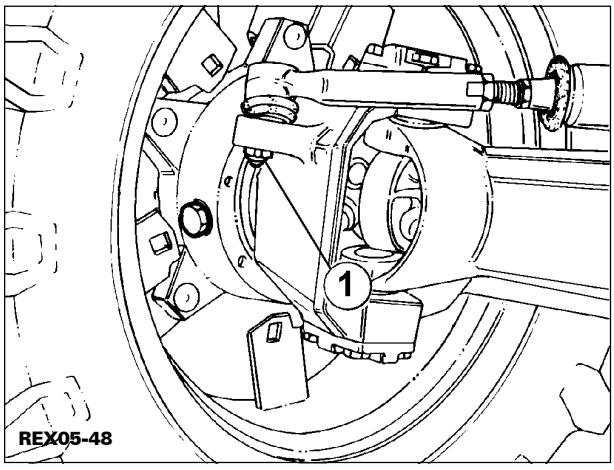

Fig.5-48

OPERATION 35
Oil changes in 4WD front axle

Axle housing Fig.5-49
Place a vessel under the plug (1), remove the plug and drain out all oil.

Side final drives Fig.5-50
Position the final drive plugs (1) downward. Place a vessel under each final drive plug (1) (one for each final drive). Remove the plugs and drain out all oil.

Oil filling in 4WD front axle

NOTE: *See the Lubricants and Fuels chart for the correct type of oil.*

Front axle housing
Fit the plug (1 - Fig.5-49) back when no more oil is coming out and fill up with fresh oil through the filler (1- Fig.5-52) up to the level of the plug (1 - Fig.5-50).

Wait for the oil to stabilize before checking the level. Top up if necessary.

Fit the plug back (1 - Fig.5-52).

Side final drives
Position the plugs (1 - Fig.5-51) on the wheel center line. Fill up with oil of the specified type to the level of the holes. Wait for the oil to stabilize before checking the level. Top up if necessary. Fit the plugs back (1 - Fig.5-51)

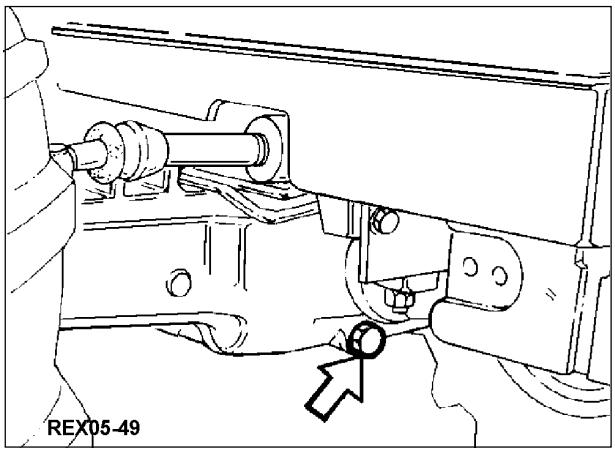

Fig.5-49

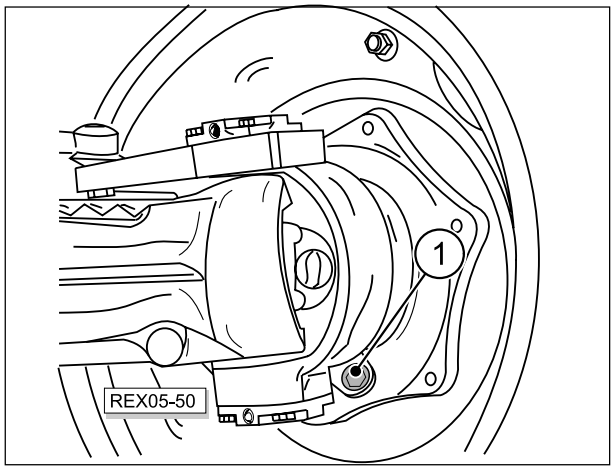

Fig.5-50

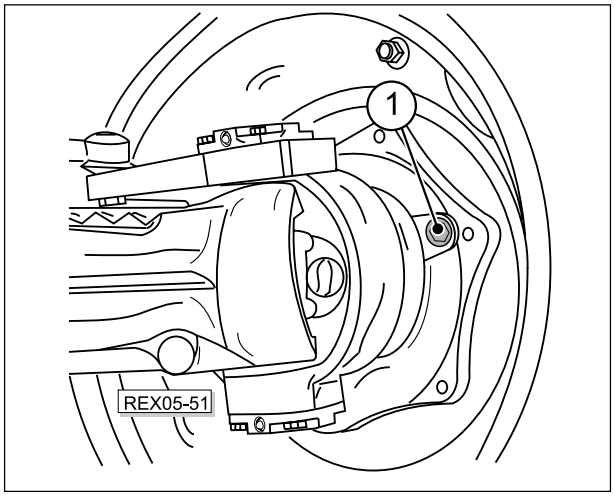

Fig.5-51-Front final drive: (1) filler plug

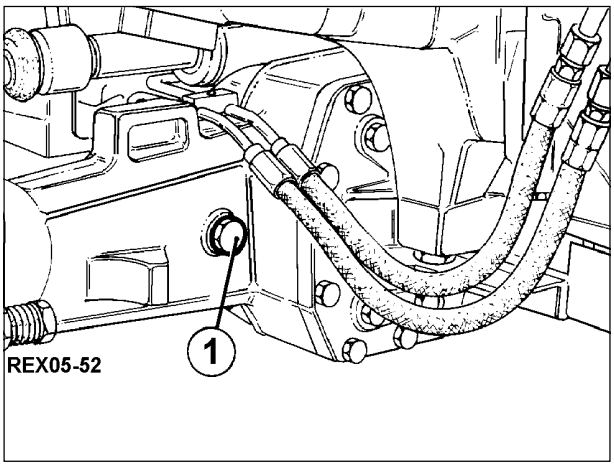

Fig.5-52 - Front axle

OPERATION 36
Starter motor Fig.5-53

The starter motor (1) should be thoroughly cleaned at least once a year. Particularly check the condition of the brushes and collector.

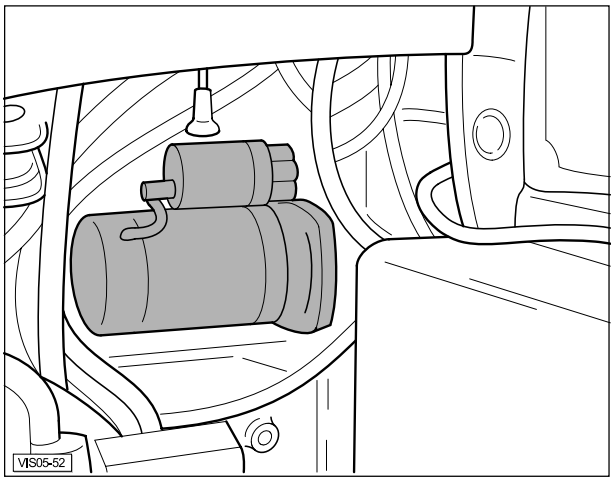

Fig.5-53

Alternator – Fig.5-54

Have the condition and operation of the alternator checked by a specialized workshop.

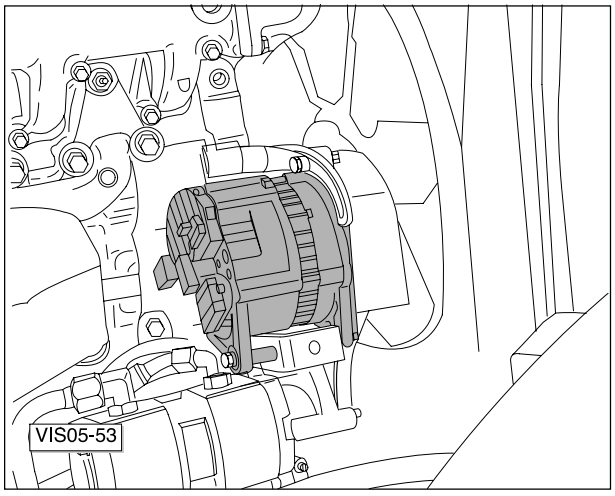

Fig.5-54

OPERATION 37
Dry air filter Fig.5-55

Release the clips (2), remove the cover (3) and replace the external cartridge (4) along with the internal safety cartridge (5). Carefully clean the filter cover (3) and bowl (1).

NOTE: *The two filter cartridges should be replaced at least once a year even if the tractor has not yet worked for 1000 hours.*

***WARNING:** The internal cartridge (5) must always be replaced. It must never be cleaned.*

***WARNING:** Always stop the engine before demounting the filter elements.*

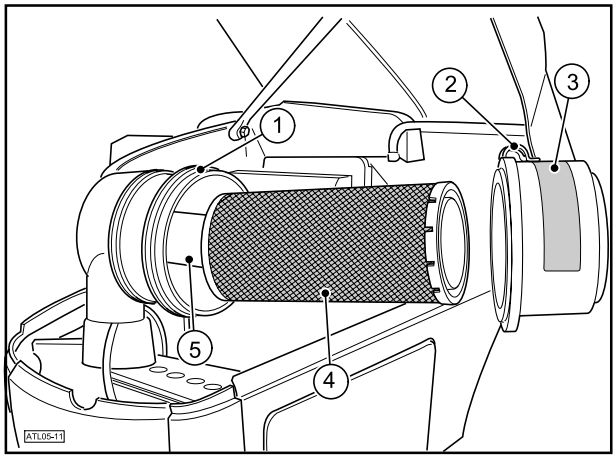

Fig.5-55

OPERATION 38
Cooling system
Fig.5-56 and 5-57
Cleaning

Remove the filler cap (1) from the expansion reservoir (2) to make coolant draining easier.

***WARNING:** NEVER remove the radiator cap when the engine is hot. Unscrew the cap very slowly to release the pressure before taking it off completely.*

Set a suitable vessel in position and drain out the coolant through radiator plug and through plug (1 - Fig.5-57) of the engine block.

Shut off the drain plugs and fill the system with coolant fluid until the level reaches 20-25 mm below the edge of the fill plug (1 - Fig. 5-56) of the expansion reservoir (2). Remove the fill plug (1) and allow the engine to run at 1000 RPM for a few minutes. Now check the level and top up if necessary. Shut the fill plug (1) once the cleaning operation has terminated.

NOTE: *In an emergency, to make up for sudden leaks, the system can be topped up with water by pouring this through the filler plug (1)*

***CAUTION:** Have the fault repaired as soon as possible. Fill with mixture as indicated in the table below.*

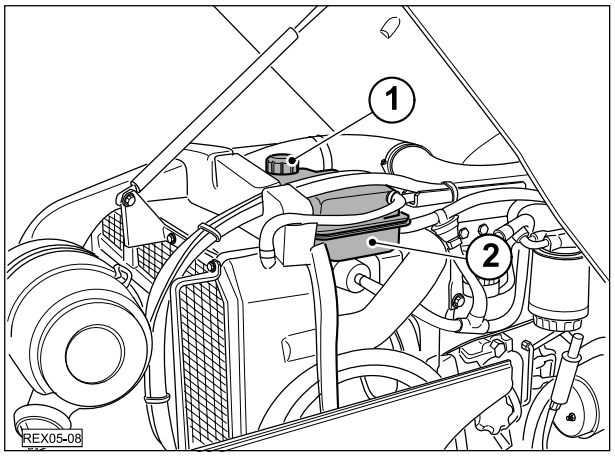

Fig.5-56

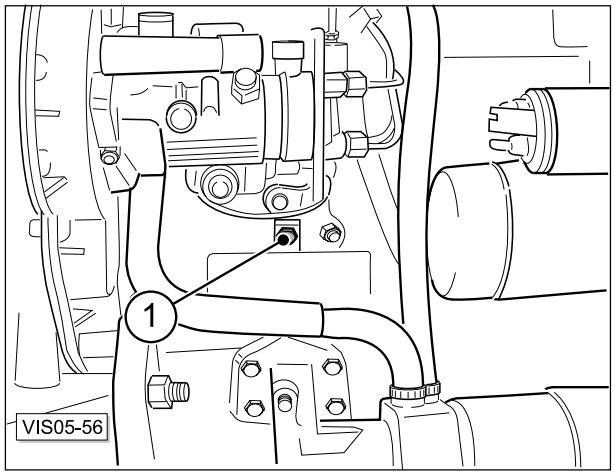

Fig.5-57

Precautions against freezing temperatures

The system is filled with a mixture of water and antifreeze. Add the proportion of antifreeze given in the following table.

Degrees C°	- 8°	- 15°	- 25°	- 35°
Percentage of antifreeze per volume %	20	30	40	50

This mixture can be permanently maintained in the circuit for 1 year so long as you have not totalized 1000 hours service during this period. In this case, the mixture must be changed.

Flush out the system whenever you change from using pure water to antifreeze mixtures and vice versa.

OPERATION 39
Fuel tank Fig.5-58

The fuel tank is cleaned by removing the plug (1 - Fig. 5-58).

NOTE: *Drain off the sludge when the tank is almost empty and only after having placed a suitable vessel under the drain plug.*

NOTE: *Air in the fuel circuit makes starting the engine difficult. Bleed the circuit as described under General Maintenance in this section.*

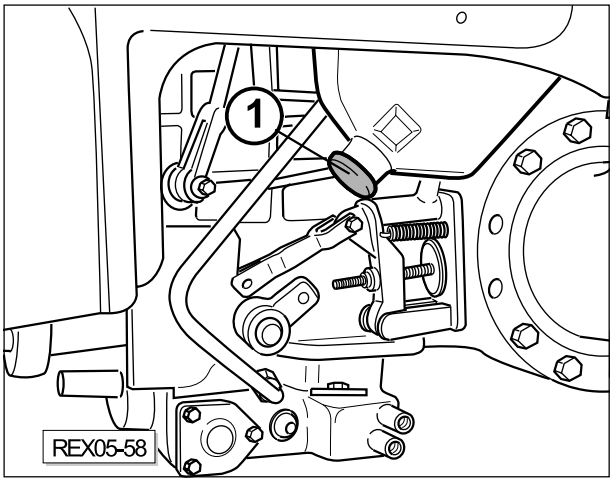

Fig.5-58

GENERAL MAINTENANCE

Bleeding air from the fuel system

Air is normally expelled automatically from this type of system.
However, if such an operation should be necessary, proceed in the following way (Fig. 5-59).

1 - Make sure that the fuel tank contains a sufficient quantity of fuel.

2 - Slacken off the bleeder fitting (1) at the top of the filter body by a couple of turns. Operate the starter motor until bubble-free fuel flows out of the bleeder. Re-tighten the bleeder fitting.

3 - Slacken off one of the fittings that connect the injectors and allow the engine to turn over by means of the starter motor until the engine starts.

***CAUTION:** Do not operate the electric starter motor for more than 20 seconds at a time to avoid overheating the windings. If the engine fails to start, wait a while to let the starter motor cool down before trying again.*

4 - Shut off the injector fitting when bubble-free fuel flows from the fitting itself.

5 - Check all the fuel lines and seals for leaks.

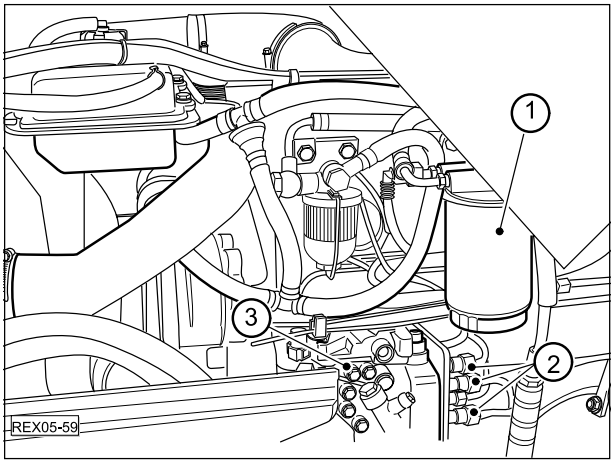

Fig. 5-59 Injection pump, injectors and filters - 4-cyl. engine. The position of the fuel filters may be different according to the type of engine.
1 - Fuel filter.
2 - Injector fittings.
3 - Injection pump.

Brakes

Bleeding the air from the rear brake circuit

It becomes necessary to bleed the circuit when air enters owing to lack of oil in the relative reservoir or when the brake system is serviced.
This operation should be carried out by specialized personnel. If, however, you decide to do it yourself, proceed in the following way.

1 - Make sure that the reservoir (1 - Fig.5-60) is full.

2 - Thoroughly clean the area around the bleed screw.

3 - Fully depress the right-hand brake pedal. Meanwhile, unscrew the bleed screw (1 - Fig.5-61) a half-turn and allow any air and oil to flow out. Re-tighten the bleed screw and release the pedal.

4 - Repeat this operation until bubble-free oil flows from the bleed screw.

5 - Make sure that the clutch pedal travel is firm and not spongy.

6 - Carry out the operations described above for the left-hand brake pedal (Fig.5-62).

7 - On completion of bleeding, top up the fluid level in the reservoir (1 - Fig. 5-60).

NOTE: *Never reuse previously bled oil without having first filtered it.*

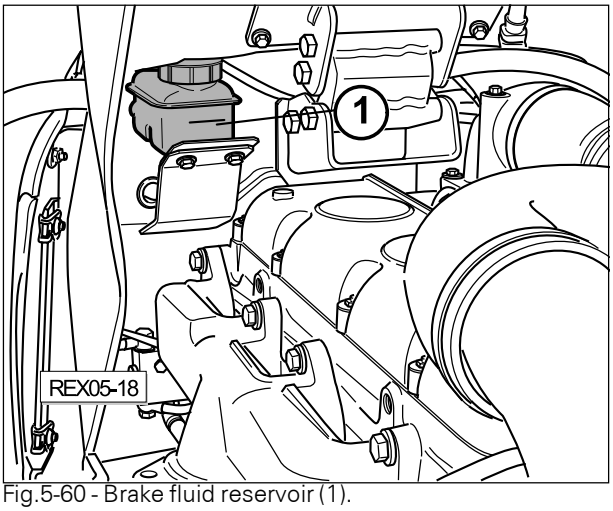

Fig.5-60 - Brake fluid reservoir (1).

***WARNING:** When changing and topping up the fluid in the brake reservoir (1 - Fig. 5-60), be absolutely sure to use the correct type of fluid as different varieties have totally different properties. These machines use a mineral-based fluid. Never mix or exchange these two types of brake fluid as this could rapidly bring about brake failure.*

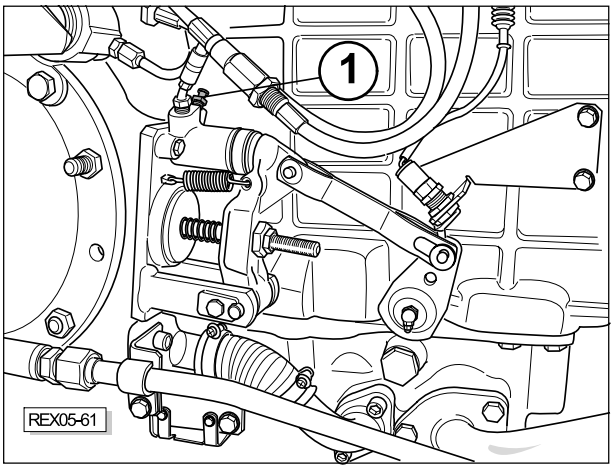

Fig.5-61 - Right-hand brake bleed screw.

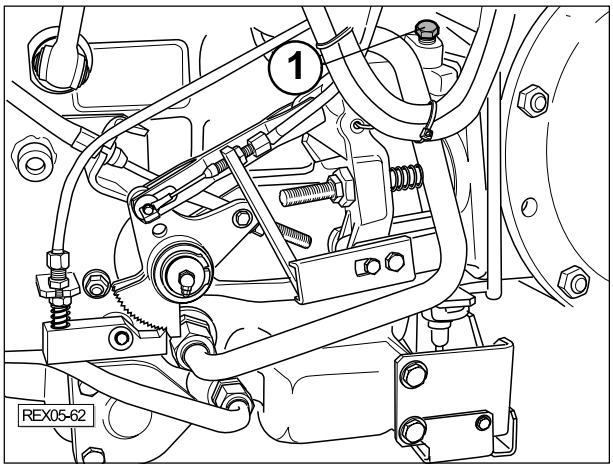

Fig.5-62 - Rear brake circuit bleeding
1 - Left-hand brake bleed screw.

Bleeding air from the front brake circuit

After having carefully carried out operations 1 to 7 to bleed the rear brakes, proceed in the following way:

1 - Depress both brake pedals at the same time. Use the special coupling lock to keep the pedals together. Unscrew the bleed screw (2 - Fig.5-63) on the on-off valve (3) until bubble-free oil flows out. Re-tighten the screw and release the pedals.

2 - Depress both pedals at the same time and slacken off the two bleed screws (1 - Fig.5-64) at the rear of the central part of the front axle.
Repeat this operation until bubble-free oil flows out.

NOTE: *if the tractor is equipped with a valve for hydraulic trailer braking, it will also be necessary to bleed off any air in the piloting tube of this valve. A screw on the body of the valve allows this operation to be easily carried out.*

3 - Check free pedal travel and that the front brakes act at the same time. Do this by testing the action on the road.

4 - After having done this, top up the level in the reservoir (1 - Fig.5-63) with oil of the prescribed type.

WARNING: Always keep the brake pedals coupled for on-road driving in order to ensure simultaneous braking on both sides. Never use the brakes independently on public roads.

When working on slopes, avoid using the brakes as much as possible. Instead, select a lower gear and use engine braking.

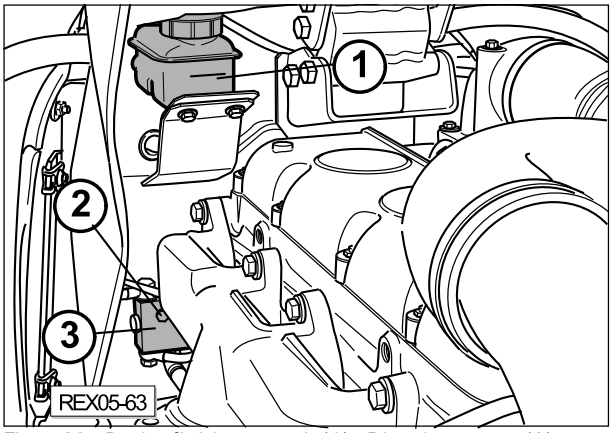

Fig.5-63 - Brake fluid reservoir (1) - Bleeder screw (2), on-off valve (3).

***WARNING:** The oil in the brake circuits has been studied to operate at a temperature of 100°C but only if not polluted by other substances, e.g. water in considerable quantities will turn into vapour and prevent the braking system from operating in the correct way. Take the necessary precautions to prevent water from penetrating into the system: protect the front axle and the components in the braking system when the tractor is washed; store oil in sheltered places where water cannot infiltrate. If you think that there is water in the braking system you must contact your dealer's specialized personnel and have it removed. In this case, the rear brake cylinders will have to be demounted and emptied and particularly the brake housing of the front axle which, being the lowest part of the system, is the one most exposed to this type of fault.*

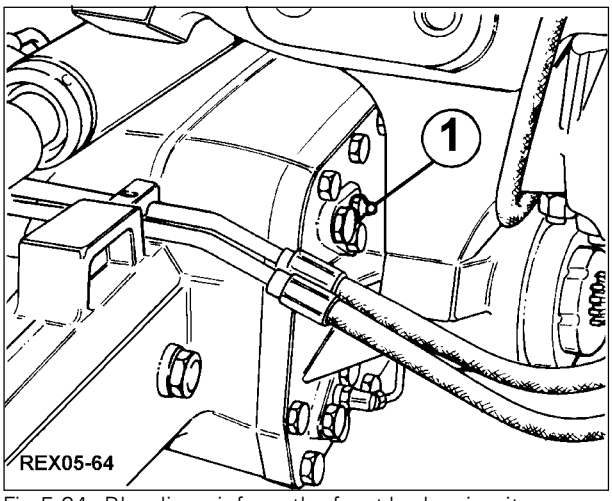

Fig.5-64 - Bleeding air from the front brake circuit.
1 - Bleeder screws (2 screws).

Hydraulic trailer brakes

To brake the trailer along with the tractor, the flexible tube of the trailer brakes must be connected to the fitting at the rear of the tractor (1 - Fig.5-65). Always make sure that the two parts are clean before you connect them, to ensure that the various components operate in a perfect way.

***WARNING:** Trailer brake approved for ITALY. When the tractor is operating, it is absolutely essential to engage the parking brake when either connecting or detaching the tube that links the tube of the trailer braking system to the quick coupling (1 - Fig.5-65).*

NOTE: *Air may enter the hydraulic trailer brake circuit during normal servicing operations such as oil changes, cleaning of oil ducts. Air in the circuit leads to vibrations on the pedal when the brakes are used. Air can be easily bled from the circuit by pulling the parking brake lever and depressing the brake pedal several times.*

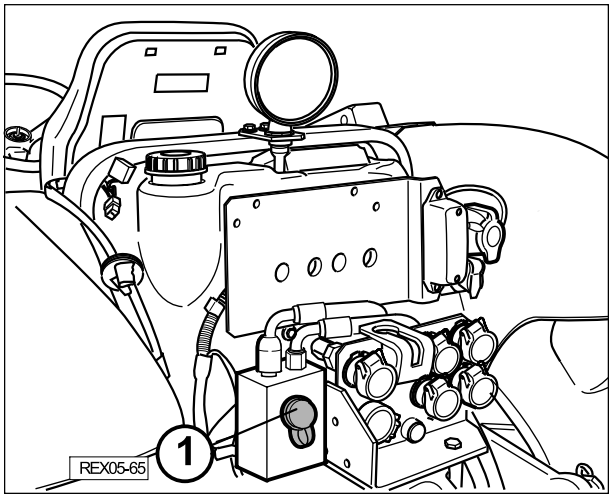

Fig.5-65 - Hydraulic trailer braking tap (1).

Dashboard control coatings

***CAUTION:** Use water and a neutral detergent to clean the coatings of dashboard and controls. Any commercial product to clean car interiors may be used. DO NOT use any kind of solvents or alcohol.*

ELECTRICAL SYSTEM
Battery Fig.5-66

Your tractor is equipped with a "Maintenance Free" battery.

Keep the battery clean and dry, particularly on top.
Check the electrolyte level: it should just touch the upper mark and never be under the bottom mark.
If necessary, open the covers (1) and add distilled water.

***WARNING:** NEVER top up with SULPHURIC ACID.*

WARNING

Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm.
Wash your hands after handling.

Do not use quick battery chargers to recharge the batteries.
Check the battery charge with a digital voltmeter as described below:
- connect to the two battery poles, matching their terminals with the same sign (negative with negative and positive with positive). Now read the measured value on the instrument;
- compare this value with the ones in the table to establish the battery charge status.

Voltage (V)	Charge status
12.66	100%
12.45	75%
12.30	50%
12.00	25%

When the voltage is near 12.30 V, the battery must be immediately charged with current equal to 1/10 of the capacity in Ah (a 50 Ah battery must be given a 5 Amp charge).

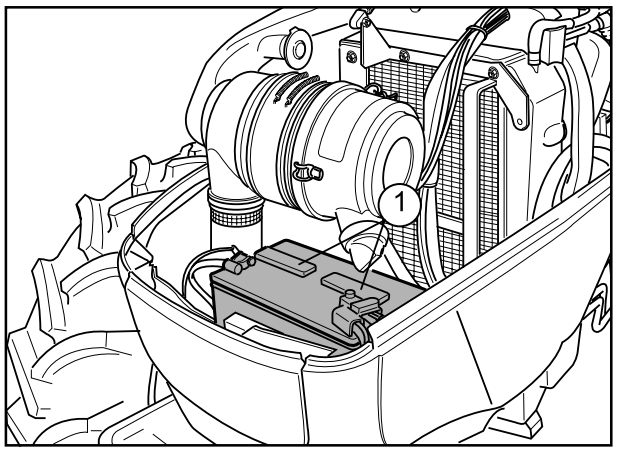

Fig.5-66 Battery

NOTE: *If the battery must be topped up frequently or tends to discharge, have the electrical system of your tractor checked by your area Dealer's specialized personnel.*

***WARNING:** Remember to disconnect the wires before you recharge the battery. It is advisable to remove the battery from its housing and to recharge it well away from the tractor.*

***WARNING:** The place in which the battery is recharged must be well ventilated. Do not smoke or work with tools liable to produce sparks whilst the battery is being recharged.*

NOTE: *Batteries and electric accumulators contain various components that can pollute the environment unless they are correctly recycled after use.*
You are strongly advised to return all "dry batteries" used in electrical or electronic systems to your Dealer. He will ensure that they are correctly disposed of or recycled. In some countries, this procedure is required by law.

NOTE: *Proceed as described below when the old battery must be replaced with a new one:*

- *First disconnect the terminal with the negative (-) sign and then the one with the positive (+) sign.*
- *Fit the new battery into its housing without tightening the fixing screws too much.*
- *Clean the terminals and connect them to the battery poles. Make sure you connect the negative (-) pole last.*
- *Fully tighten the terminal screws on to the poles and protect them with Vaseline.*

Alternator

The alternator keeps the battery fully charged.

The alternator is a brushless model and requires no special maintenance. However, the following precautions must be observed.

1 - When fitting a battery, make sure that the positive and negative terminals are connected to the same leads as the alternator. If you make the wrong connection, you will short circuit the battery through the alternator diodes.

2 - When connecting the battery to a charger, make sure that the positive (+) lead of the charger is connected to the positive of the battery, and the negative (-) to the negative. Incorrect connection will damage the alternator diodes and other circuit components.

3 - Never run the alternator unless it is properly connected. If the battery is not connected, high voltages can build up inside the alternator that can be extremely dangerous if the output terminal is touched. Make sure that all connections are firm and tight before carrying out any inspections or tests on the electrical system.

4 - Never short circuit or earth any of the alternator terminals. This could damage the electrical system.

5 - Never invert the alternator connections. The battery and alternator earths must be of the same sign or the alternator diodes will be damaged.

6 - Always disconnect both the alternator terminals before undertaking any electric arc welding on the tractor.

Headlights

As you can use your tractor on public roads, the lighting must comply with the applicable traffic and road regulations. Periodically check headlight alignment in the following way:

Checking headlight alignment (Fig. 5-68).

- Halt the tractor on level ground facing a shaded wall (preferably white). The tractor must be unloaded and the tyres correctly inflated. Mark two crosses on the wall in front of the tractor headlights (Fig. 5-68).
- Reverse the tractor 5 meters (16.4 ft) away from the wall.
- Switch on the main beam. The center of each beam must be vertically aligned with the crosses on the wall. A maximum outward divergence of 130 mm (5 in) is acceptable.
- Switch on the dipped beam. The line separating the lighted area from the dark area must fall below the crosses and must be separated from their centers by at least 1/20th of the height of the crosses from the ground.
- Adjust the headlight alignment screws to correct alignment as necessary (Fig. 5-67).

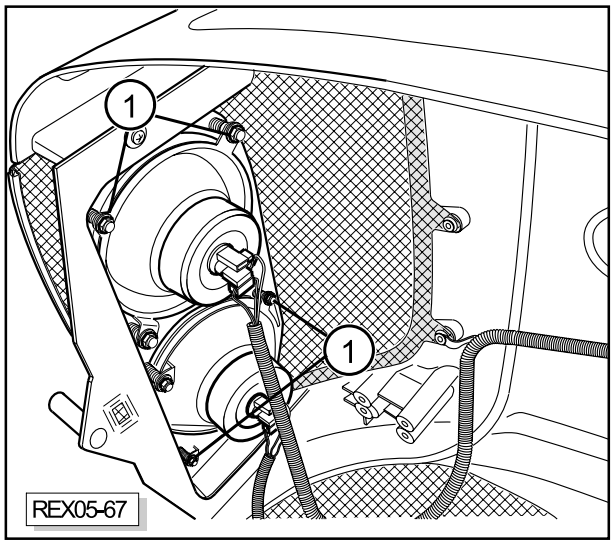

Fig.5-67- Headlight alignment adjusters.

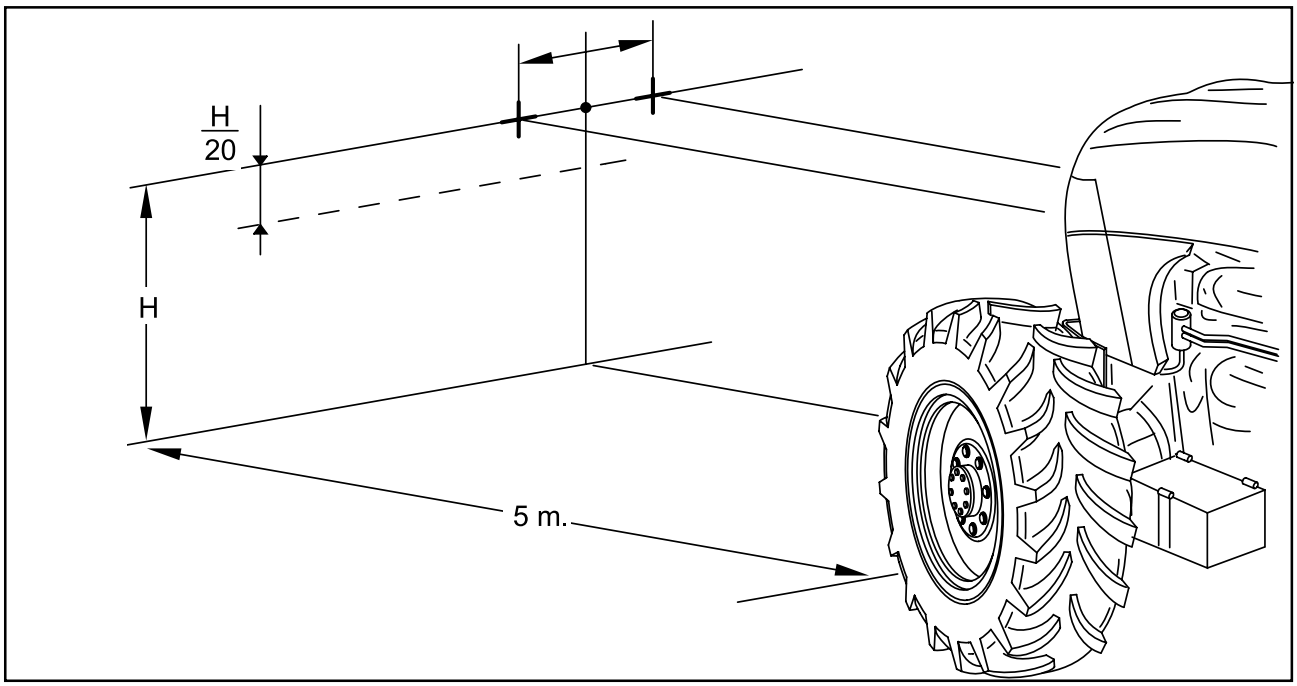

Fig.5-68 - Checking headlight alignment.

How to replace the headlight bulbs Fig.5-69

1 - Remove the connector (2).
2 - Remove the rubber guard (1).
3 - Slacken off the retention spring (4).
4 - Remove the defective bulb (1).
5 - Fit in a new bulb. Remember not to hold the bulb in your hand. Use a cloth to handle the bulb whilst it is being fitted.
6 - Fit the parts back in place by proceeding through the instructions in reverse order.

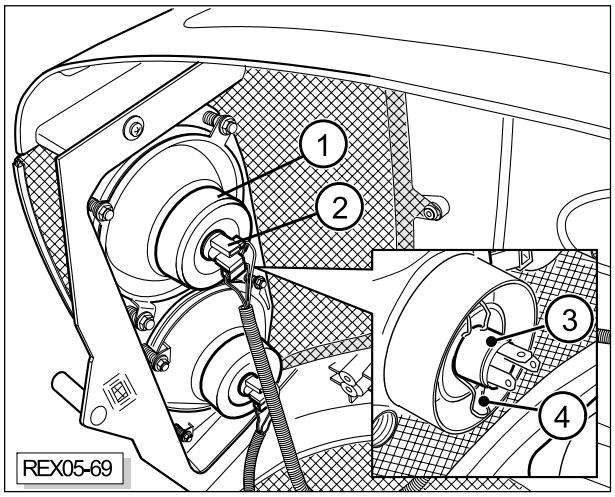

Fig.5-69

How to replace the bulbs in the rear side lights and hazard lights Fig.5-70

1 - Unscrew the screws (1) and remove the glass cover.
2 - Press down the bulb and turn it in the anti-clockwise direction.
3 - Replace the faulty bulb.

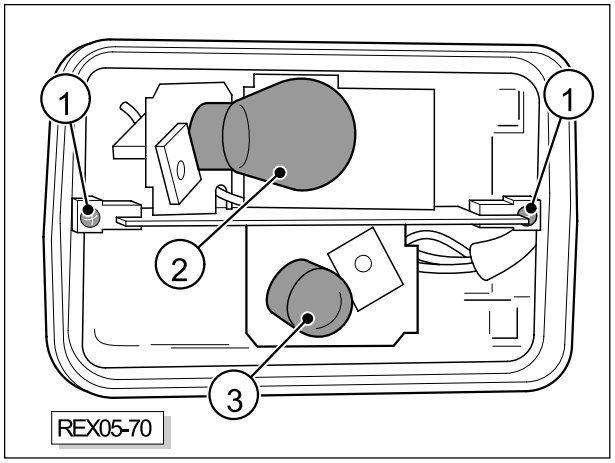

Fig.5-70

How to replace the bulbs in the front side lights and hazard lights Fig.5-71

1 - Unscrew the screws (1) and remove the glass cover.
2 - Replace the faulty bulb.
Ref.2- Intermittent turn indicator light
Ref.3- Side light
To replace the faulty bulb, press it down and turn it in the anti-clockwise direction.

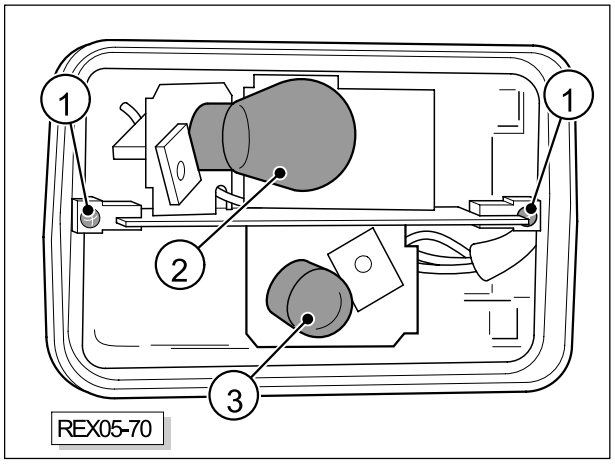

Fig.5-71

FUSES AND RELAYS

The tractor's electrical system is protected against short-circuits and overload by a set of fuses. The number of fuses in the electrical system depends on the tractor version.

The fuses are installed in two fuse-boxes:
A - Main relay and fuse box (Fig. 5-73) on the left-hand side of the dashboard.
B - Front fuse box (Fig. 5-72).

NOTE: *Before replacing a blown fuse with an equivalent one, try to identify and remedy the cause of the fault.*

Fuses in the battery housing

The fuses contained in the fuse box of the battery housing are valid for all models (Fig.5-72).

FUSES	PROTECTED CIRCUITS	Amp.
	Fusebox B - Fig.5-72	
50	Alternator	70
51	Key primary	60
52	Primary	60
53	Headlight supply primary	60
54	50 Amp relay and fuse for glow plugs	50

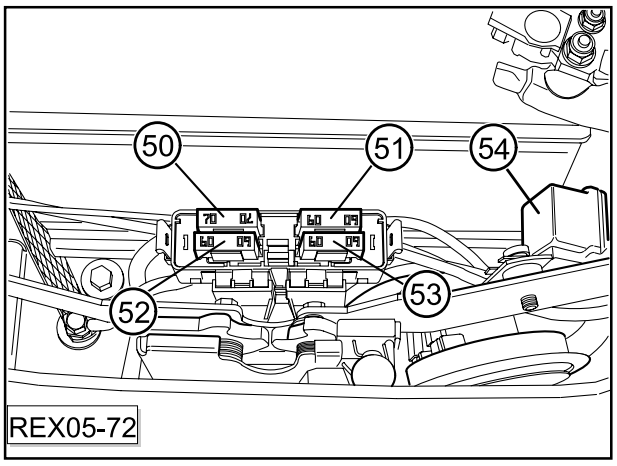

Fig.5-72 - Front fuse box (B).

FUSES AND RELAYS - Top platform

Fuses and relays in the main fuse box (Fig.5-73) on the left-hand side of the dashboard.

FUSES Fig.5-73		
FUSES	PROTECTED CIRCUITS BOX A	Amp.
F 1	Rear PTO	7.5
F 2	Auxiliary relay	5
F 3	Gearshift neutral control unit	5
F 4	Instrument supply	5
F 5	Instrument supply	5
F 6	Rich mixture control	7.5
F 7	D.T. solenoid valve	5
F 8	Brake light switch	7.5
F 9	B.D. solenoid valve	7.5
F 10	Dipped beams	15
F 11	Main beams	15
F 12	Hazard lights	10
F 13	Lh sidelight	7.5
F 14	Rh sidelight	7.5
F 15	Combination switch	10
F 16	Horn + beacon	15
FUSES	PROTECTED CIRCUITS BOX B	Amp.
F 1	NAO control unit	7.5
F 2	Starter motor	15
F 3	Work light	7.5
F 4	1-2 control valve	5
F 5	Lift	5
F 6	D+ indicator light	5
F 7	Emergency stop	10
F 8	BD+Stop	15
F 9	25 Amp power socket	15
F 10	25 Amp power socket	20
F 11	Glow plugs fuse (hanging into the battery housing Fig.5-72)	50

RELAYS Fig. 5-73	
K 1	Starter motor safety relay
K 2	Instruments and brake lights
K 3	Auxiliary power socket
K 4	Work lights
K 5	Rear PTO engaged
K 6	Diff lock+ Stop
K 7	Main beams
K 8	Diff lock solenoid valve
K 9	Dipped beams
K 10	Front work light
K 11	Glow plugs fuse: hanging into the battery housing (54 - Fig.5-72)

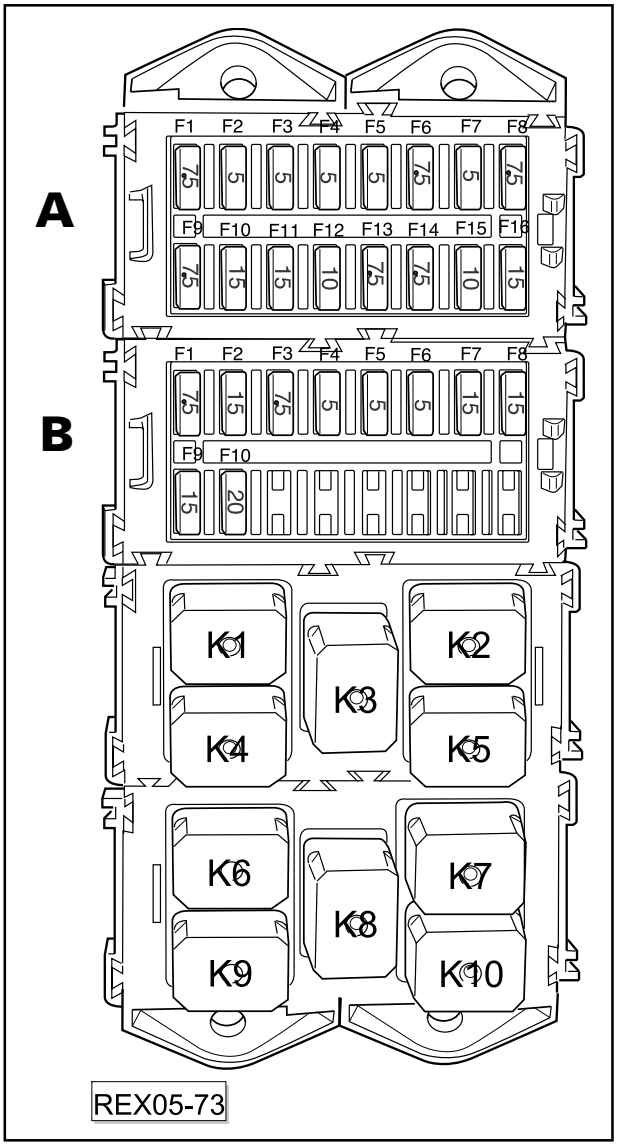

Fig.5-73 - Main relay and fuse box.
F = Fuses
K = Relays

FUSES AND RELAYS - Techno platform

Fuses and relays in the main fuse box (Fig.5-74) on the left-hand side of the dashboard.

FUSES Fig.5-74		
FUSES	PROTECTED CIRCUITS BOX A	Amp.
F 1	Rear PTO	7.5
F 2	Auxiliary relay	5
F 3	Gearshift neutral control unit	5
F 4	Instrument supply	5
F 5	Instrument supply	5
F 6	Rich mixture control	7.5
F 7	D.T. solenoid valve	5
F 8	Brake light switch	7.5
F 9	B.D. solenoid valve	7.5
F 10	Dipped beams	15
F 11	Main beams	15
F 12	Hazard lights	10
F 13	Lh sidelight	7.5
F 14	Rh sidelight	7.5
F 15	Combination switch	10
F 16	Horn + beacon	15
FUSES	PROTECTED CIRCUITS BOX B	Amp.
F 1	NAO control unit	7.5
F 2	Starter motor	15
F 3	Work light	7.5
F 4	1-2 control valve	5
F 5	Lift	5
F 6	D+ indicator light	5
F 7	Emergency stop	10
F 8	BD+Stop	15
F 9	25 Amp power socket	15
F 10	25 Amp power socket	20
F 11	Glow plugs fuse (hanging into the battery housing Fig.5-72)	50

RELAYS Fig. 5-73	
K 1	Starter motor safety relay
K 2	Instruments and brake lights
K 3	Auxiliary power socket
K 4	Work lights
K 5	Rear PTO engaged
K 6	Diff lock+ Stop
K 7	Main beams
K 8	Diff lock solenoid valve
K 9	Dipped beams
K 10	Front work light
K 11	Glow plugs fuse: hanging into the battery housing (54 - Fig.5-72)

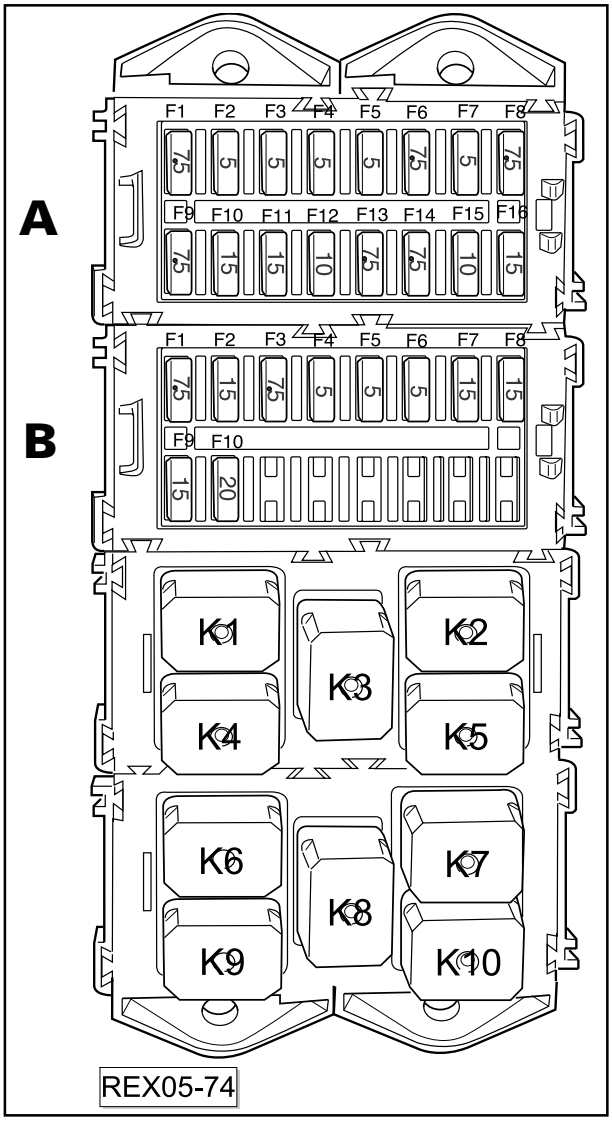

Fig.5-74 - Main relay and fuse box.
F = Fuses
K = Relays

7-pole power socket for trailer (Fig. 5-75 and 5-76)

A 7-pole power socket is installed on the rear of the tractor (1 - Fig. 5-76). This socket is used to connect the light circuits of the trailer.

Connections (Fig.5-75)
1. Lh turn indicator; 2. Not used; 3. Earth; 4. Rh turn indicator; 5. Rh rear side light; 6. Brake lights; 7. Lh rear side light.

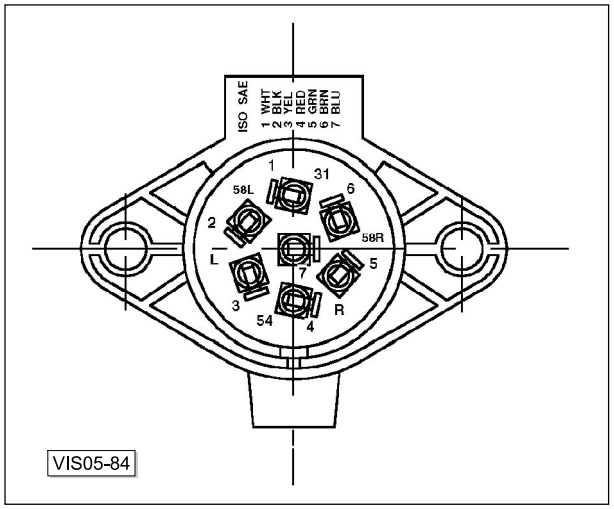

Fig.5-75 Connections and correspondances for 7-pole power socket according to ISO-SAE standards.

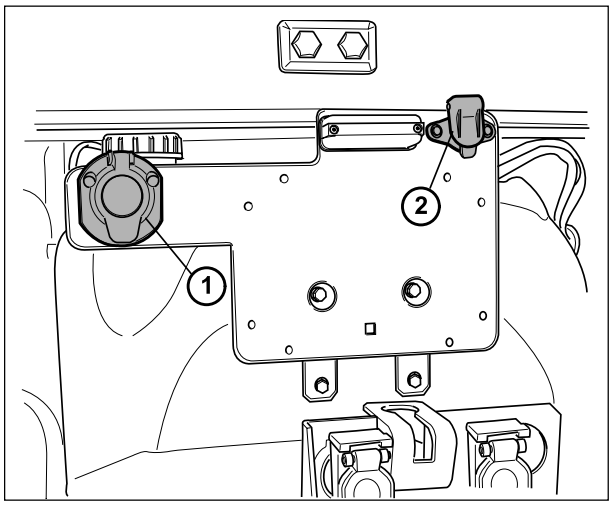

Fig.5-76

Auxiliary power socket12V (2-Fig. 5-76)

Connections (Fig.5-77)
1- Key-operated positive - Max. load 5A
2- Negative
3- Direct battery positive - Max. load 25A

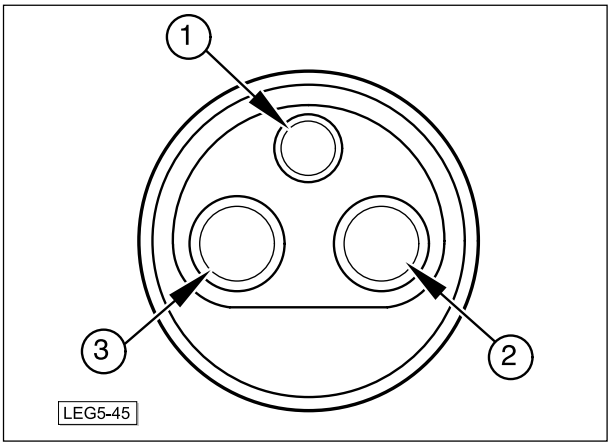

Fig.5-77

Long idle periods

Take the following precautionary measures when your tractor is not going to be used for a long period of time.

- Park the tractor in a dry, sheltered place.
- Drain the coolant from the radiator and engine.
- Grease all points provided with grease nipples.
- Clean the fuel filter.
- Remove the injectors and squirt a small quantity of engine oil into the cylinders. Turn the engine over by hand, then fit the injectors back in place.
- Generally clean the tractor, particularly the bodywork components. Protect the painted parts by applying silicone wax and the unpainted metal parts by applying protective lubricant. Park the tractor in a dry, sheltered and possibly ventilated place.
- Make sure that all controls are in neutral (including the electric switches and parking brake controls).
- Remove the ignition key from the ignition switch.
- Make sure that the cylinder stems (of the power steering, power lift systems, etc.) are positioned.
- Empty the fuel tank and fill it with new diesel fuel until the maximum level is reached.
- Remove the battery, clean the cover and spread Vaseline on the terminals and terminal caps. Now connect the battery in a ventilated place where the temperature is not liable to drop below 10°C and where it is not exposed to direct sunlight.
- Check the battery charge with a voltmeter as described in the battery part of this section. Recharge if it is necessary.
- Place stands or other supports under the axles in order to take the weight off the wheels. When the tractor is raised in this way, it is advisable to deflate the tyres. If this is not possible, the tyre pressure must be periodically checked.
- Cover the tractor with a tarpaulin (not plastic or waterproof).

***CAUTION:** At the end of the idle period, when you start the engine again, pay particular attention to the instructions about starting the engine in the Operation chapter.*

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Chapter 6
Technical specifications

Technical specifications

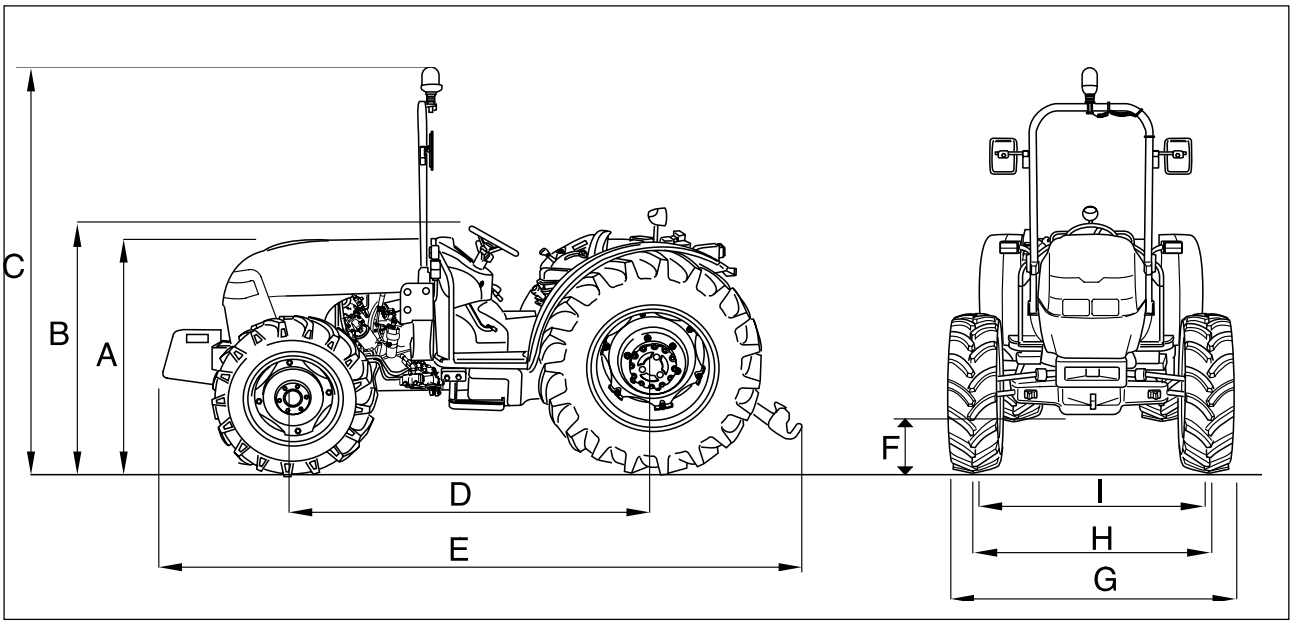

Fig. 6-1a - Platform

General data	60 GE		60 F	
	2 WD	4 WD	2 WD	4 WD
With tyres				
– Front	9.00-10	260/70R16	7.50-15	280/70R18
– Rear	14.9 LR 20		14.9 LR 24	
Weights				
In running order, with full fuel tank, without ballast, with safety frame ..... kg	2425	2600	2500	2675
As above, with cab ..... kg	—	—	2650	2825
Dimensions				
A- Height at bonnet ..... mm	1230		1280	
B- Height at steering wheel ..... mm	1375		1430	
C- Max. Cab height ..... mm	—		2660	
Max. Height at safety frame ..... mm	2155		2312	
D- Wheelbase ..... mm	2065	2017	2065	2017
E- Max. length without front ballast and links ..... mm	3600		3600	
F- Ground clearance (drawbar) ..... mm	345		350	
G- Min. width ..... mm	See track tables		See track tables	
H - Front track ..... mm				
I - Rear track ..... mm				

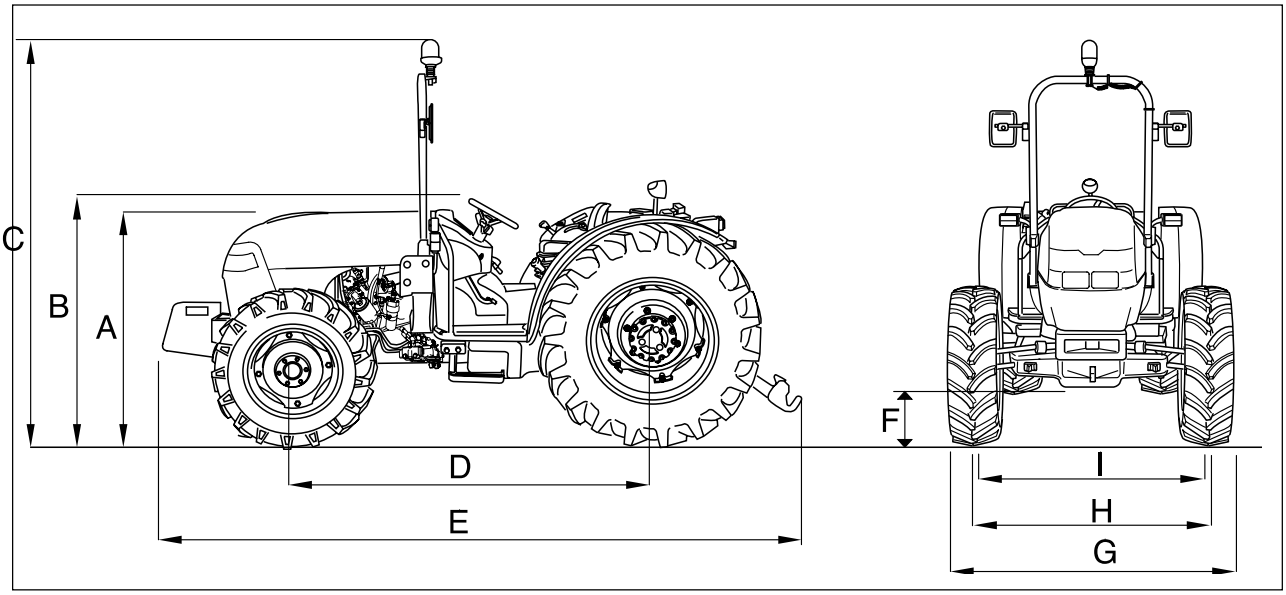

Fig.6-1b

General data

	70 GE		70 F		80 GE		80 F	
	2 WD	4 WD	2 WD	4 WD	2 WD	4 WD	2 WD	4 WD
With tyres								
– Front	9.00-10	260/70R16	7.50-16	280/70R18	9.00-10	260/70R16	7.50-16	280/70R18
– Rear	14.9 LR 20		14.9 R 24		14.9 LR 20		14.9 R 24	
Weights								
In running order, with full fuel tank, without ballast, with safety frame ..... kg	2425	2600	2500	2675	2425	2600	2500	2675
As above, with cab ..... kg	—	—	2650	2825	—	—	2650	2825
Dimensions								
A- Height at bonnet ..... mm	1230		1280		1230		1280	
B- Height at steering wheel ..... mm	1375		1430		1375		1430	
C- Max. Cab height ..... mm	—		2660		—		2660	
Max. Height at safety frame ..... mm	2155		2312		2155		2312	
D- Wheelbase ..... mm	2065	2017	2065	2017	2065	2017	2065	2017
E- Max. length without front ballast and links ..... mm	3600		3600		3600		3600	
F- Ground clearance (drawbar) ..... mm	345		350		345		350	
G- Min. width ..... mm	See track tables		See track tables		See track tables		See track tables	
H - Front track ..... mm								
I - Rear track ..... mm								

Technical specifications

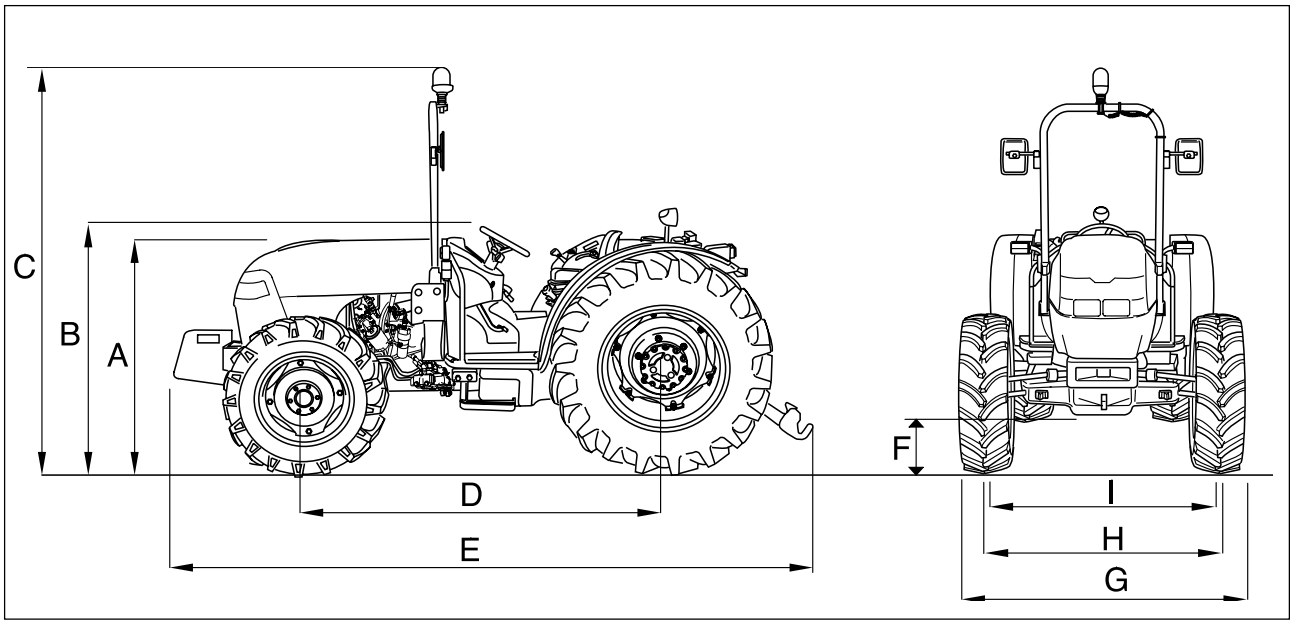

Fig.6-1c

General data	75 GE		75 F		75 XL	
	2 WD	4 WD	2 WD	4 WD	2 WD	4 WD
With tyres						
– Front	9.00-10	260/70R16	7.50-16	280/70R20	7.50-16	275/80R18
– Rear	14.9 LR 20		14.9 R 28		360/70R24	
Weights						
In running order, with full fuel tank, without ballast, with safety frame ..... kg	2450	2615	2615	2845	—	2865
As above, with cab ..... kg	—	—	2760	2990	—	3010
Dimensions						
A- Height at bonnet ..... mm	1230		1280		1280	
B- Height at steering wheel ..... mm	1375		1450		1450	
C- Max. Cab height ..... mm	—		2260		2260	
Max. Height at safety frame ..... mm	2155		2312		2322	
D- Wheelbase ..... mm	2174	2134	2174	2134	—	2134
E- Max. length without front ballast and links ..... mm	3709		3709		3709	
F- Ground clearance (drawbar) ..... mm	345		350		350	
G- Min. width ..... mm	See track tables		See track tables		See track tables	
H - Front track ..... mm						
I - Rear track ..... mm						

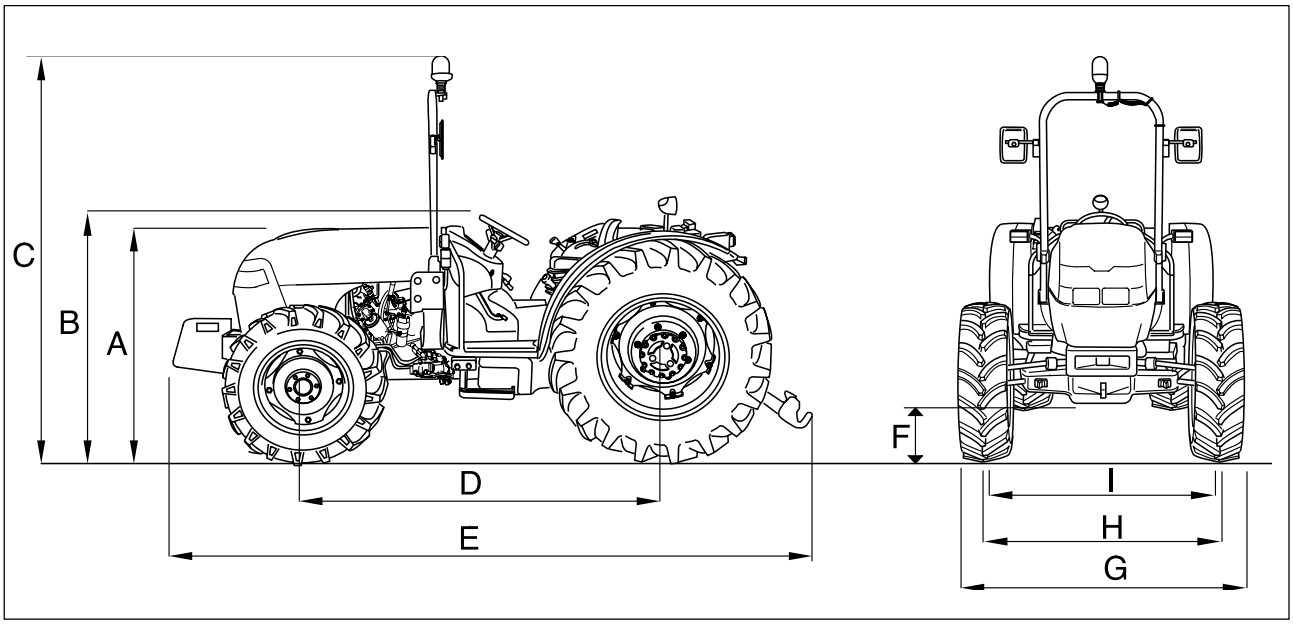

Fig.6-1d

General data	85 GE		85 F		85 XL	
	2 WD	4 WD	2 WD	4 WD	2 WD	4 WD
With tyres						
– Front	9.00-10	280/70R16	7.50-16	280/70R20	7.50-16	275/80R18
– Rear	14.9 LR 20		14.9 R 28		16.9 R 24	
Weights						
In running order, with full fuel tank, without ballast, with safety frame ..... kg	2450	2615	2615	2845	—	2865
As above, with cab ..... kg	—	—	2760	2990	—	3010
Dimensions						
A- Height at bonnet ..... mm	1230		1280		1280	
B- Height at steering wheel ..... mm	1375		1450		1450	
C- Max. Cab height ..... mm	—		2260		2260	
Max. Height at safety frame ..... mm	2153		2312		2322	
D- Wheelbase ..... mm	2174	2134	2174	2134	—	2134
E- Max. length without front ballast and links ..... mm	3709		3709		3709	
F- Ground clearance (drawbar) ..... mm	345		350		350	
G- Min. width ..... mm	See track tables		See track tables		See track tables	
H - Front track ..... mm						
I - Rear track ..... mm						

Technical specifications

CAUTION: The technical specifications given here are only of a general kind. For technical specifications of each market, please refer to the information material supplied by your Dealer.

Transmission

Clutch with mechanical PTO

Two single disc dry clutches in a single unit with separate controls:
One hand lever to control the disengagement of the PTO clutch, and one pedal lever to control the bearbox clutch.

Mod. 60 - 70 - 80 - 75

11" (279.4 mm)

- PTO disc: organic
- Clutch disc: Mod.60-70 organic
  Mod.80 cerametallic

Mod. 85 - 95 - 105 standard; Mod. 80 on request

- Diameter 12" (304.8 mm)
- PTO disc organic
- Clutch disc cerametallic

Clutch for Speed-Five mechanical gearbox and hydraulic PTO

Single disc dry clutch, 12" (309.8 mm) diameter with cerametallic plates.
Mechanical control.

The Power Shuttle gearbox has two hydraulic clutches with oil cooled discs.

Transmission

Gearbox Speed-Five

Standard gearbox with helical gears and 5 synchronized speeds with 4 speed ranges (Creeper - Low - Standard - High) offering 20 forward speeds and 20 reverse speeds by means of the synchronized reverse shuttle.

Powershuttle

Gearbox with 5 speeds for 4 speed ranges (Low - Normal - High and Creeper on request) with electrohydraulic Powershuttle reverse shuttle, for a total 20 forward + 20 reverse speeds.

Powershuttle + Power Five.
Made up by Powershuttle gearbox and hydraulic HI-LO.
Gearbox with 5 speeds for 4 speed ranges (Low - Normal - High and Creeper on request) with electrohydraulic Powershuttle reverse shuttle and electro-hydraulically engaged Power Five, for a total 40 forward + 40 reverse speeds.

2WD version for 30 Kph max. speed
Gearbox with 4 synchro speeds for 4 ranges: 16 forward + 16 reverse speeds with electro-hydraulic synchro reverse shuttle.
With hydraulic HI-LO: 32 forward + 32 reverse speeds.

Rear axle

Rear axle with bevel gear pair and epyciclic rear final drives.

Bevel gear pair for all GE models 4.111
Bevel gear pair for all F and GT models 4.888
Reduction ratio of side final drives:
– Mod.60 GE-F 5,200
– Mod.70-80-75-85-95-105 GE-F-XL 5,077

Total reduction ratio:
– Mod.60GE 21.372
– Mod.70-80-75-85-95-105 XL 20.866
– Mod.60F 25.410
– Mod.70-80F 24.816
– Mod.75-85-95-105 F-XL 24.816

Front to rear axle ratio

Mod. 60GE..... 1.4478
Mod. 60F..... 1.4966
Mod.70GE-80GE-75GE-85GE-95GE-105GE 1.4591
Mod.70F-80F-75F-75F-85F-95F-105F 1.4846
Mod.75XL-85XL-95XL-105XL 1.4846

Differential lock

Rear differential lock with electro-hydraulic control and hydraulic engagement.

In all models, the diff lock is disengaged by means of the brake pedals.

Front and rear differential locking takes place at the same time by means of the Twin-Lock system in four-wheel drive tractors.

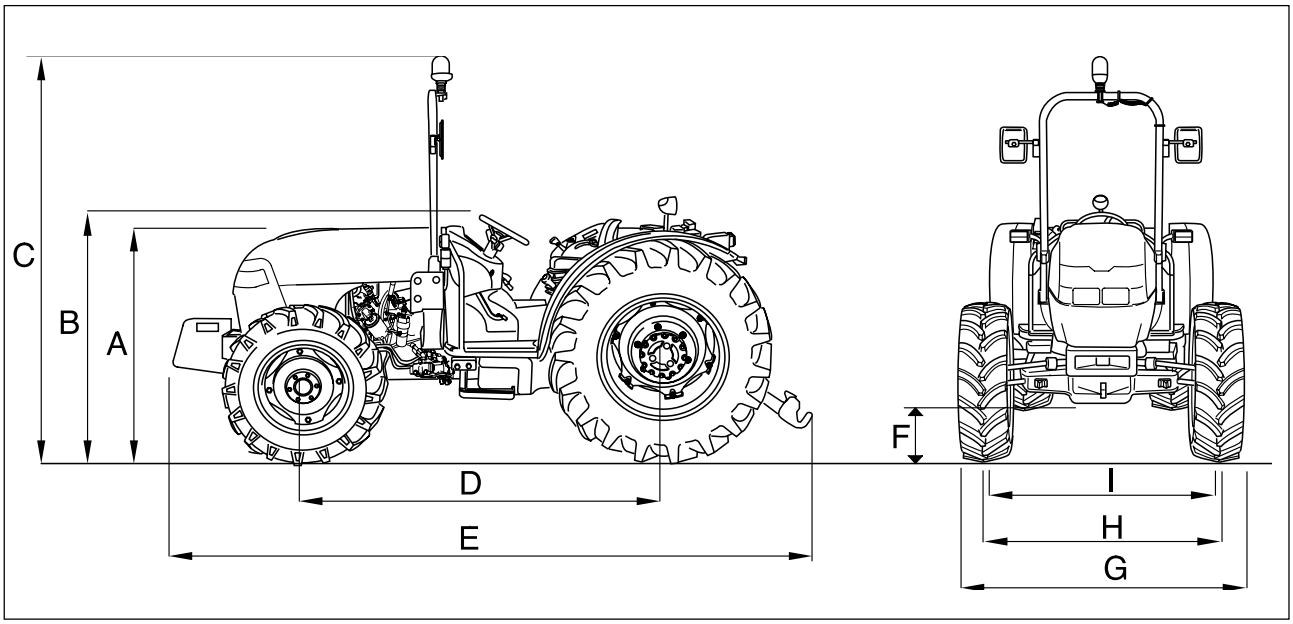

Fig.6-1f

General data	105 GE		105 F		105 XL	
	2 WD	4 WD	2 WD	4 WD	2 WD	4 WD
With tyres						
– Front	9.00-10	280/70R16	7.50-16	280/70R18	7.50-16	275/80R18
– Rear	360/70R24		14.9 R 24		14.9 R 24	
Weights						
In running order, with full fuel tank, without ballast, with safety frame ..... kg	2450	2615	2615	2845	—	2865
As above, with cab ..... kg	—	—	2760	2990	—	3010
Dimensions						
A- Height at bonnet ..... mm	1230		1280		1280	
B- Height at steering wheel ..... mm	1375		1450		1450	
C- Max. Cab height ..... mm	—		2260		2260	
Max. Height at safety frame ..... mm	2153		2312		2322	
D- Wheelbase ..... mm	2174	2134	2174	2134	—	2134
E- Max. length without front ballast and links ..... mm	3709		3709		3709	
F- Ground clearance (drawbar) ..... mm	345		350		350	
G- Min. width ..... mm	See track tables		See track tables		See track tables	
H - Front track ..... mm						
I - Rear track ..... mm						

Technical specifications

Engine

		Mod 60	Mod 70	Mod 80
Type		Perkins Diesel, 4 stroke direct injection		
Model		1103C-33	1103C-33T	1103C-33T
Fuel supply		Natural	Turbo	Turbo
Number of cylinders		3	3	3
Bore	mm	105	105	105
Stroke	mm	127	127	127
Displacement	litres	3.3	3.3	3.3
Compression ratio		19.3 : 1	18.2 : 1	18.2 : 1
Max. power rating ISO	HP/kW	58,5/43	66,9/49,2	74,8/55
Max. rated speed	RPM	2200	2200	2200
Max. speed with no load	RPM	222	270	291
Max. torque rating	Nm	1400	1400	1400
Max. torque speed	RPM	750	750	750
Idling speed	RPM			
Timing system				
Type		Overhead valves, controlled by rocker arms		
Tappet gap, cold engine				
Intake	mm	0.20	0.20	0.20
Exhaust	mm	0.45	0.45	0.45
Fuel system				
Fuel pump		AC-DELCO, diaphragm type		
Injection pump		rotary LUCAS		
Filter on injection pump delivery		C.A.V. replaceable cartridge, with bleeder plug		
Firing order		1-2-3	1-2-3	1-2-3
Injectors		Perkins	Perkins	Perkins
Injector pressure setting	Bar	-	-	-
Cold starting device		Thermostarter		
Air filter		dry type, with two extractable elements for service		

Engine lubrication

Pump driven forced lubrication.

Oil filtration by:
- Gauze filter at pump intake.
- Replaceable cartridge filter on engine delivery line.

Oil pressure with engine at rated power speed: 3.5/4.2 bar.

Engine starting

Thermostarter device for starting at low temperatures.

Cooling

Water cooling, forced circulation by centrifugal pump.

Vertical tube type radiator.

Thermostat control for water circulation.

Normal temperature: 77°/ 85° C.

Anti-freeze needed for very low temperatures (see "Maintenance" chapter).

Engine

		Mod 75	Mod 85	Mod 95	Mod 105
Type		Perkins Diesel, 4 stroke direct injection			
Model		1104C-44	1104C-44	1104C-44T	1104C-44T
Fuel supply		Natural	Natural	Turbo	Turbo
Number of cylinders		4	4	4	4
Bore	mm	105	105	105	105
Stroke	mm	127	127	127	127
Displacement	litres	4.4	4.4	4.4	4.4
Compression ratio		19.3 : 1	19.3 : 1	18.2 : 1	18.2 : 1
Max. power rating ISO	HP/kW	68.2/50.2	81.6/60	91.9/67.6	98.6/72.5
Max. rated speed	RPM	2200	2200	2200	2200
Max. speed with no load	RPM	273	292	380	364
Max. torque rating	Nm	1400	1400	1400	1400
Max. torque speed	RPM	750	750	750	750
Idling speed	RPM				
Timing system					
Type		Overhead valves			
Tappet gap, cold engine					
Intake	mm	0,20	0,20	0,20	0,20
Exhaust	mm	0,45	0,45	0,45	0,45
Fuel system					
Fuel pump		Diaphragm type			
Injection pump		rotary LUCAS C.A.V			
Filter on injection pump delivery					
Firing order		1-3-4-2	1-3-4-2	1-3-4-2	1-3-4-2
Injectors		Perkins	Perkins	Perkins	Perkins
Injector pressure setting	Bar	290 bar	290 bar	294 bar	294 bar
Cold starting device		Thermostarter			
Air filter		dry type, with two extractable elements for service			

Engine lubrication

Pump driven forced lubrication.

Oil filtration by:
- Gauze filter at pump intake.
- Replaceable cartridge filter on engine delivery line.

Oil pressure with engine at rated power speed: 3.5/4.2 bar.

Engine starting

Thermostarter device for starting at low temperatures.

Cooling

Water cooling, forced circulation by centrifugal pump.

Vertical tube type radiator.

Thermostat control for water circulation.

Normal temperature: 77°/ 85° C.

Anti-freeze needed for very low temperatures (see "Maintenance" chapter).

Technical specifications

CAUTION: The technical specifications given here are only of a general kind. For technical specifications of each market, please refer to the information material supplied by your Dealer.

Transmission

Clutch with mechanical PTO

Two single disc dry clutches in a single unit with separate controls:
One hand lever to control the disengagement of the PTO clutch, and one pedal lever to control the bearbox clutch.

Mod. 60 - 70 - 80 - 75

11" (279.4 mm)

- PTO disc: organic
- Clutch disc: Mod.60-70 organic
  Mod.80 cerametallic

Mod. 85 - 95 - 105 standard; Mod. 80 on request

- Diameter 304.8 mm
- PTO disc organic
- Clutch disc cerametallic

Clutch for Speed-Five mechanical gearbox and hydraulic PTO

Single disc dry clutch, 12" (309.8 mm) diameter with cerametallic plates.
Mechanical control.

The Power Shuttle gearbox has two hydraulic clutches with oil cooled discs.

Transmission

Gearbox Speed-Five

Standard gearbox with helical gears and 5 synchronized speeds with 4 speed ranges (Creeper - Low - Standard - High) offering 20 forward speeds and 20 reverse speeds by means of the synchronized reverse shuttle.

Powershuttle

Gearbox with 5 speeds for 4 speed ranges (Low - Normal - High and Creeper on request) with electrohydraulic Powershuttle reverse shuttle, for a total 20 forward + 20 reverse speeds.

Powershuttle + Power Five.
Made up by Powershuttle gearbox and hydraulic HI-LO.
Gearbox with 5 speeds for 4 speed ranges (Low - Normal - High and Creeper on request) with electrohydraulic Powershuttle reverse shuttle and electro-hydraulically engaged Power Five, for a total 40 forward + 40 reverse speeds.

2WD version for 30 Kph max. speed
Gearbox with 4 synchro speeds for 4 ranges: 16 forward + 16 reverse speeds with electro-hydraulic synchro reverse shuttle.
With hydraulic HI-LO: 32 forward + 32 reverse speeds.

Rear axle

Rear axle with bevel gear pair and epyciclic rear final drives.

Bevel gear pair for all GE models 4.111
Bevel gear pair for all F and GT models 4.888
Reduction ratio of side final drives:
– Mod.60 GE-F 5,200
– Mod.70-80-75-85-95-105 GE-F-XL 5,077

Total reduction ratio:
– Mod.60GE 21.372
– Mod.70-80-75-85-95-105 XL 20.866
– Mod.60F 25.410
– Mod.70-80F 24.816
– Mod.75-85-95-105 F-XL 24.816

Front to rear axle ratio

Mod. 60GE..... 1.4478
Mod. 60F..... 1.4966
Mod.70GE-80GE-75GE-85GE-95GE-105GE 1.4591
Mod.70F-80F-75F-75F-85F-95F-105F 1.4846
Mod.75XL-85XL-95XL-105XL 1.4846

Differential lock

Rear differential lock with electro-hydraulic control and hydraulic engagement.

In all models, the diff lock is disengaged by means of the brake pedals.

Front and rear differential locking takes place at the same time by means of the Twin-Lock system in four-wheel drive tractors.

Power take off

Two types are available.

Power take off with mechanical engagement
PTO engaged and disengaged by means of a hand lever on the front instrument panel.
Engagement through a dry disc clutch.

Electro-hydraulic power take off
PTO engaged through a hydraulic clutch with electro-hydraulic control by means of a button in the cab.
Engagement is modulated by a hydraulic accumulator.
The PTO driveline is stopped through an electro-hydraulically controlled brake by means of the same switch used to control the PTO itself.

Speeds
Two speeds:
1st type: 540/540ECO RPM
2nd type: 540/1000 RPM

PTO type	PTO RPM	Engine RPM
540 540ECO 1000	540 540ECO 1000	1944 1377 1917

Different PTO output shafts are available, in compliance with A.S.A.E. standards.

- 1 3/8" (34.9 mm) diameter shaft with 6 splines (standard assembly).

- 1 3/8" (34.9 mm) diameter shaft with 21 splines (standard assembly).

PTO proportional to ground speed
Rotation speed in synchronized mode (PTO driveline turns per rear wheel turn):

Model	PTO driveline revolutions		
	540 RPM	540E RPM	1000 RPM
60GE	7.1259	9.9472	13.3843
70-80-75-85GE	6.9573	9.7118	13.0676
95-105GE	6.9573	9.8220	13.0676
60F	8.47	11.828	15.92
70-80-75-85F 75-85GT	8.2735	11.5491	15.5398
95-105F 95-105GT	8.2735	11.6802	15.5398

Engagement and selection of the PTO operating mode by means of a lever on the left-hand side of the gearbox.

Brakes

Rear brakes

Multidisc oil-cooled brakes mounted on rear differential half shafts.

Number of friction discs:
Mod. 60 GE; ..... n° 6 (3 per side)
Mod. 70-80 GE/F; 75 GE/F; 85 GE/F;
95 GE/F; 105 GE/F ..... n° 6 (3 per side)
Mod. 75 XL; 85 XL; 95-105 XL ..... n° 8 (4 per side)

Friction material ..... .resin-graphite.

Hydraulic control by means of the two pedals on the driver's right: the two pedals can be coupled together by a locking device to provide simultaneous braking action on both sides.

Parking brake controlled by an independent hand lever and linkage acting directly on the main brakes.

Hydraulic trailer brake mounted on request.

Compressed air trailer brake mounted on request.

Front brakes for 4WD tractors

Multidisc oil-cooled brakes mounted on front differential half shafts.

Number of friction discs:

All models..... .....4 (2 per side).
Friction material..... ..... resin-graphite.

IBS-Integral Braking System hydraulic control ensuring simultaneous braking along with the rear brakes when the brake pedals are coupled together by means of the relative locking device.

2 WD front axle

Boxed front axle turning around the central pivot.

Track adjusted by telescopic sliding at the axle ends.

Max. turning angle ..... 52°

4WD front axle

Front axle in spheroidal cast iron pivoting around two central supports.

Max. steering angle ..... 55°

Mechanically engaged differential lock engaged with electro-hydraulic "HYDRALOCK" control.

Electro-hydraulic front drive engagement by means of hydraulic clutch of the Spring-On/Pressure-Off type.

Propeller shaft without universal couplings installed along the longitudinal axis of the tractor.

Transmission through central differential and epicyclic final drives in the wheel hubs.

Mod. 60GE-70GE-80GE-75GE-85GE-95GE-105GE

Interflange 1282
Bevel gear pair 11/32
Epicyclic final drives 1:4.6
Total reduction ratio 1:13.3818

Mod. 60F

Interflange 1282
Bevel gear pair 11/38
Epicyclic final drives 1:4.6
Total reduction ratio 1:15.8907

Mod. 70F-80F-75F-85F-95F-105F

Interflange 1282
Bevel gear pair 10/34
Epicyclic final drives 1:4.6
Total reduction ratio 1:15.64

Mod. 75XL-85XL-95XL-105XL

Interflange 1442
Bevel gear pair 10/34
Epicyclic final drives 1:3.4
Total reduction ratio 1:15.64

4WD transmission gears withreduction ratio:

- with creeper
  60GE: 30/33 reduction
  All other models: 30/32

- without creeper
  60GE: 29/32
  All other models: 29/31

On request: electro-hydraulically controlled HYDRALOCK differential lock.

Front differential lock

On request: electro-hydraulically controlled HYDRALOCK differential lock.

The front diff lock is engaged at the same time as the rear diff lock.
Disengagement by means of both brake pedals.

Steering components

Power steering

Power steering system controlled by the steering wheel with independent hydraulic system. Double-acting steering cylinder, mounted on the axle casing.

Oil supplied by a gear pump. driven by the input shaft, with paper filter on the delivery side.

Max. pump delivery with engine at
top RPM rating: ..... 29.9 litres/min

Pressure relief valve calibration:
– for 2WD axle ..... 120 bar
– for 4WD axle ..... 120 bar

Turns on the steering wheel (from one stop point to the next):
– 2 WD 3
– 4 WD 3
– Diametro del volante di guida ..... 400 mm

Steering wheel diameter

Track is adjustable on 2WD and 4WD front axles and on rear axles. See the Tables in the "Operation" chapter.

Hydraulic circuit

Two stage hydraulic gear pump powered directly by the gears of the timing system with filter on the intake.

The two pump stages supply:

1st Stage: delivery 29.9 l/min at a 2200 RPM engine rate. 20 micron paper filter on the delivery.
Supplies:
- The power steering circuit, max. operating pressure 150 +/- 5 bar.
- The 17-18 bar low pressure circuit including Powershuttle, Power-Five, the four-wheel drive, the hydraulic Power Take-Off, the hydraulic brake of the Power Take-Off, and the differential lock.
- The oil cooling circuit, max. pressure 5 bar.
- The lubricating circuit of the gearbox, Powershuttle and Power-Five, max. pressure 1.5 bar.

2nd Stage: delivery 52.3 l/min at a 2200 RPM engine rate.
Supplies:
- The hydraulic trailer brake, max. operating pressure 130 +/- 10 bar (on request).
- The auxiliary control valves (max. 4), max. operating pressure 180 +/- 5 bar.
- The hydraulic power lift, max. operating pressure 180 +/- 5 bar.

Electronically controlled power lift - Landtronic (available with cab on request)

Draft control, position control, "Intermix" combined draft and position control, and float mode.

Monitoring system ..... Electronic

Type of control ..... Electro-hydraulic

Electronic plant, sensors and electro-distributor ..... BOSCH

Draft control by means of sensors mounted on the lower link of the three-point linkage.

Operating voltage rating ..... 12 Volt

Mechanically controlled power lift

Draft control, position control, "Intermix" combined draft and position control, and float mode.
Automatic lifting/lowering device (on request, available according to the market).

Three-point linkage

Class 2 three-point linkage. Class 1 on request.

Adjuster crank on RH vertical link rod. Optional hydraulic adjuster jack, operated by auxiliary control valve.

LH link rod with two positions at the top end: one fixed and the other sliding.

Adjustable side stabilizers.

Lower links with quick hitch mechanisms on request.

Top link with quick hitch mechanism, optional hydraulic adjuster jack.

Three point linkage powered by one single-acting hydraulic cylinder.

Max. lifting capacity at ends of articulated rods in horizontal position: 2400Kg

Auxiliary control valves

Open center auxiliary control valves with rapid "Push-Pull" attachments.

The maximum number of control valves that can be fitted depends on the tractor version:

- GE and F versions: ..... max. 2 aux. control valves;
- XL version: ..... max. 3 aux. control valves;

Available versions:

– Standard control valve transformable from single to double-acting.

– Control valve with automatic "Kick-Out" release.

– Control valve with two delivery positions and float position.

– Specific control valve for hydraulic motors.

The auxiliary control valves use the same pump as the power lift, thus the max. operating pressure is 180 bar.

Technical specifications

Electrical system

Voltage: 12 V negative earth.

Battery

"Maintenance Free" type. Complies with SAE J537 regulations.

Specifications:
Voltage ..... 12 V
Cold-starting surge at -18°C (-1°F)
for 30 seconds ..... 500 (CEI)
Charge for 20 hours ..... 100 Ah
Charge reserve ..... 170 min

Alternator

Type ..... 85 Amp/h

Automatic voltage regulator incorporated in alternator.

Remote charge indicator with light.

Starter motor

Continuous power 2.9 kW (4 HP).
Automatic pinion engagement by means of electro-magnet.

Lights

Front lights including:
- Two double filament headlights, 45/50 W.
- Two side lights (5 W bulb) with white glass.
- Two direction indicators (21 W bulb) with orange glass.
- Four direction-adjustable halogen field lights, 55W.

Rear lights including:
- Two tail lights (5 W bulb) with red glass.
- Two direction indicators (21W bulb) with orange glass.
- Two brake lights (21W bulb) with red glass.
- Registration plate light (5W bulb).
- Rear adjustable field light (55W halogen bulb) (available on request).
- 7-pin rear power socket for trailer lights.

Fuses

Consult the description in the “Electrical system” chapter for the fuses that protect the electrical system.

Cab - Safety frame

Cab, platform and safety frame tested to OECD international standards.
Noise level complies with EEC standards.
Platform completely supported on Silent Block dampers and cab in pressed structural steel with isothermal blue-tinted glass panes.
Heating, ventilating and air-conditioning systems.
Openable roof with wide visibility in an upward direction.

Seat

Standard padded seat with adjustable suspension.
The seat is also adjustable for height and distance from controls.

Bonnet

Robust single piece pressed sheet bonnet. It can be tilted for full access to the battery, air filter and main engine components.

Optional extras

- Up to four open center auxiliary control valves with hydraulic hoses and "Push-Pull" couplings. Available in various versions.
- Hydraulic trailer braking system available in two versions: one version for the Italian market and the other for the Export market.
- Pneumatic trailer braking system.
- Hydraulic two-speed power take-off, 540, 540ECO RPM, as an alternative to the 1000 RPM PTO.
- PTO proportional to the ground speed of the tractor to operate self-propelled trailers (on request and depending on the market).
- 1 3/8" (34.9 mm) diameter PTO shaft with 21 splines.
- Front ballast: 6 cast iron plates weighing 36 Kg each for a total 216 Kg.
- Rear-wheel ballast: 4 cast iron rings (2 for each wheel) weighing 45 Kg each, for a total weight of 180 Kg.
- Class 1 three-point linkage.
- Three-point linkage with quick couplings at the ends.
- Three-point linkage with hydraulic RH levelling ram and hydraulic top link.

Noise levels

THE FOLLOWING TABLES GIVE THE NOISE LEVEL VALUES, MEASURED FROM THE DRIVER'S SEAT IN INSTANTANEOUS CONDITIONS IN COMPLIANCE WITH STANDARDS EEC 77/311 (DBA) - ANNEX II (WITHOUT LOAD) - AND WHEN DRIVING IN COMPLIANCE WITH STANDARD EEC 74/151 (DBA).

Tractors with safety frame			
Model 2WD/4WD	**Test report numbers EEC 74/150**	**Noise level at driver's seat EEC 77/311 - dBA**	**Noise level at driving by EEC 74/151 dBA**
Mod. 60	e11*0034*05	86	85
Mod. 70	e11*0034*05	86	82
Mod. 80	e11*0034*04	86	81
Mod. 75	e11*0034*04	86	81
Mod. 85	e11*0034*04	86	81
Mod. 95	e11*0034*04	86	83
Mod. 105	e11*0034*04	86	83

TRACTORS WITH CAB

Model	**Test report numbers EEC 74/150**	**Noise level at driver's seat EEC 77/311 - dBA**		**Noise level at driving by EEC 74/151 dBA**
		Closed doors	**Open windows + rear doors**	
Mod 60F	e11*0034*06	83,5	85,5	86
Mod 70F	e11*0034*06	83,3	81,1	79
Mod 80F	e11*0034*06	80,6	81,9	78
Mod 75F-XL	e11*0034*06	83,7	82,9	84
Mod 85F-XL	e11*0034*06	80,7	81,9	84
Mod 95F-XL	e11*0034*06	82,5	83,0	82
Mod 105F-XL	e11*0034*06	82,0	82,2	81

'EC' DECLARATION OF CONFORMITY

The EC code on the tractor approval plate solely indicates that the tractor in question conforms with directive 89/336/EEC and successive modifications and that it therefore complies with the essential requisites of the directive governing electromagnetic compatibility (fIG.6-2).

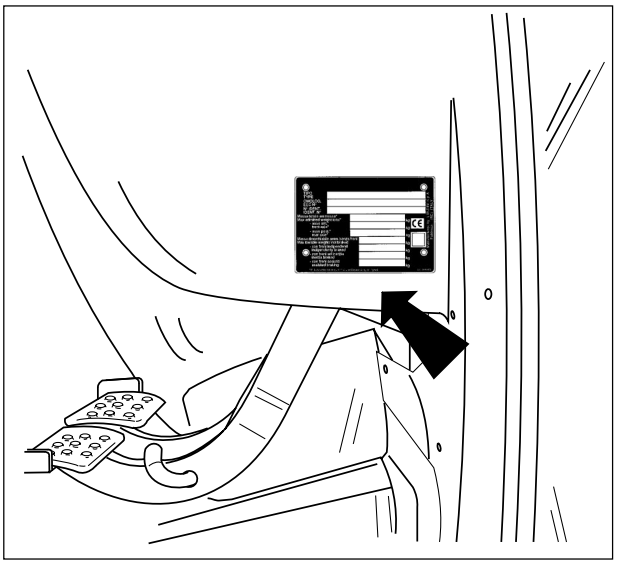

Fig.6-2 - Tractor type plate and serial number (dashboard bottom panel)

Issue of Authorization

Requests for authorization to mount fixed implements for industrial or farming applications (loaders, snow ploughs, bush-cutters, etc.) oblige the manufacturer to inform the converter of all hitching conditions, maximum permissible loads on the axles and the hitch points that are to be used. The technical specifications to be observed when hitching farming or industrial implements are enclosed with the Operation and Maintenance Manual together with a drawing of the hitch points for implements and the application form. Both documents must be obtained from the manufacturer, filled in by the converter company and sent to the Sales Management for approval.

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INFORMATION CHART FOR AUTHORIZATION APPLICATIONS

MAKE: .....

TYPE: .....

CHASSIS N° .....

BASIC AUTHORIZATION N°

TRACTOR CLASSIFICATION:

( ) Adaptation of farm tractor

( ) Road-working machine

The following documents are enclosed:
weights per axle and total with implement/s
( ) Photostat copy of conformity certificate
( ) Photostat copy of log book .....

Pre-set ballast:
( ) at rear Kg (lb) ..... projecting
( ) lateral Kg (lb) ..... projecting
( ) at front Kg (lb) ..... projecting

Initial set-up of the tractor at delivery:
max. speed
( ) Bi-directional drive
( ) Cab
( ) Fixed/folding safety frame with two uprights
( ) Safety frame with four uprights
( ) Front lift
( ) Power brakes for farm trailers

The tractor is currently equipped with the following tyres:

Front tyres

Rear tyres

HITCH POINTS:
Front: N° Bolts - meas.
Center: N° Bolts - meas.
Rear: N° Bolts - meas.

WEIGHTS WITH IMPLEMENTS HITCHED:

Tare: Kg

on the front axle: Kg

on the rear axle: Kg

HITCHED IMPLEMENTS

Make	Type	Position	Code	Alternative implements

ESCAPE CLAUSE

The undersigned ..... with registered offices in .....

DECLARES

that he/she has attached the above mentioned implement in accordance with the highest professional and technical standards and, thus, that the undersigned accepts full responsibility for the conversion and correct set-up of the vehicle in compliance with the current regulations concerning road traffic, work safety and civil and penal responsibility. The manufacturer is thus relieved of all and every responsibility for the correct operation of the vehicle, with reference to the afore-mentioned application.

DRAWING OF THE CONVERTED TRACTOR WITH OVERALL MEASUREMENTS

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TOWING DEVICES

Front pull hook

The tractor can be equipped with a front tow hook (Fig. 6-6) for emergency manoeuvres of the trailer or to tow the tractor itself.

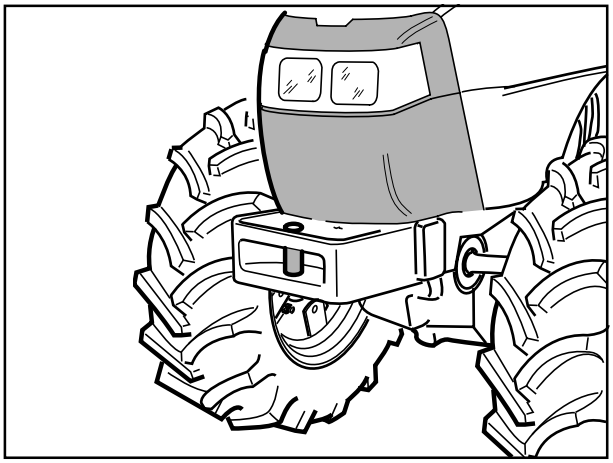


Fig.6-6 - Front pull hook.

Class C tow hook

A Class C tow hook (Fig. 6-7) can be used for agricultural implements and one or two-axle trailers.

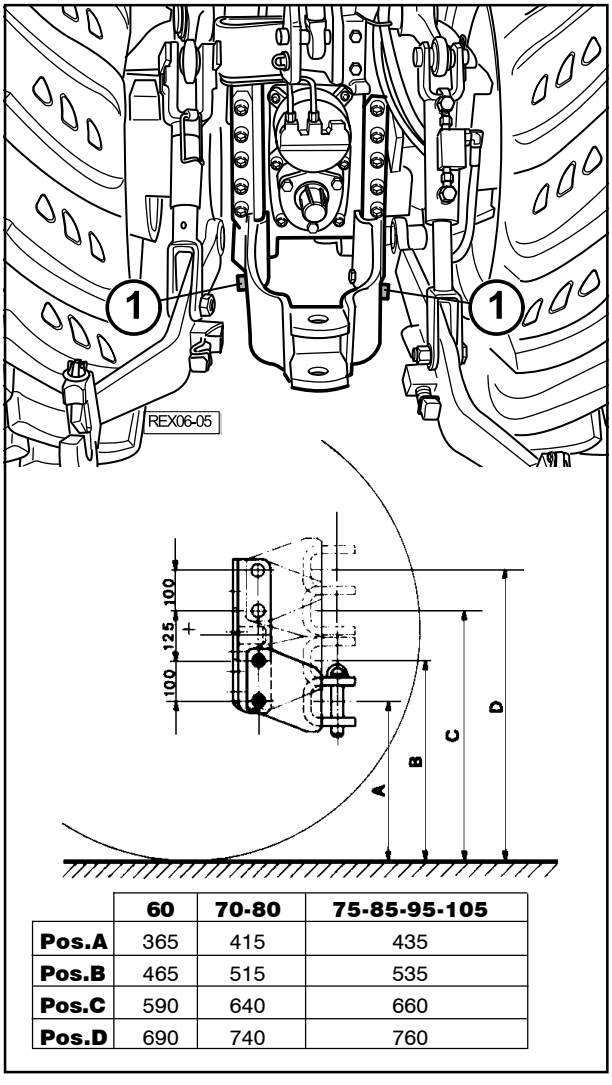
The height of the tow hook can be adjusted to make hitching the implement easier. The device can also be positioned either over or under the PTO shaft, for a total of 4 positione. See the measures given in Fig.6-7for the position from the ground.

To adjust the height, remove the pins (1 - Fig. 6-7) to release the hook and move it to a more suitable position.

This operation requires great attention. A well adjusted hook means easier handling of the tractor and, above all, safety and stability of the tractor.

If the towing attachment is placed in the highest position, towing is easier, but the tractor might pitch up at the front.

When using 4-wheel drive, place the tow hook in the lowest position, with the drawbar almost horizontal. In this way no excessive weight is unloaded from the front axle.



	60	70-80	75-85-95-105
Pos.A	365	415	435
Pos.B	465	515	535
Pos.C	590	640	660
Pos.D	690	740	760

Fig.6-7 - Adjustment of Class C tow hook.

Class C tow hook with quick height adjustment

On request, the tractor can be provided with a Class C tow hook with quick height adjustment. It is thus possible to have six different heights above the ground.
A lever (A - Fig.6-8) releases the tow hook. This can now slide up or down as required.
See the table at the right (Fig.6-9) for the different heights.

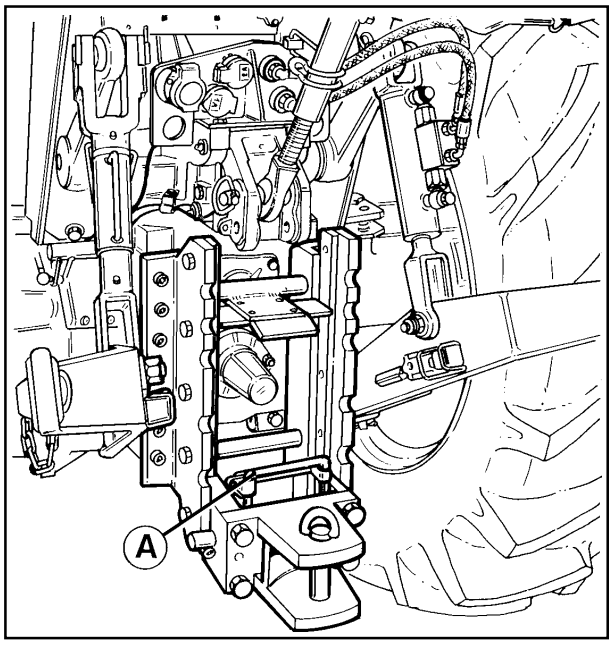


Fig.6-8 - Rear tow hook with quick height adjustment.

HEIGHT ABOVE GROUND OF QUICK ADJUSTMENT TOW HOOK (mm)			
Pos.	Model		
	60	**70-80**	**75-85-95-105**
1	427	467	487
2	527	567	587
3	602	652	672
4	702	752	772
5	752	802	822
6	802	852	872

Fig. 6-9

Class A tow hook

The tractor can be equipped with a class A tow hook (Fig.6-10*Réservoir en option 25 litres8), composed of a sector and a drawbar, designed only for agricultural implements and trailers with two or more axles.

Never use this type of attachment to tow single axle implements and trailers because they can apply enough weight to the drawbar to pitch the tractor up at the front.

The drawbar (1) can be adjusted in height for a proper coupling both to trailed implements and to PTO driven implements.

The drawing (Fig.6-11) shows which distances can be obtained between the PTO shaft and the drawbar clevis. There are two possible adjustments:

– the bar can be rotated 180° so that the clevis is oriented upward or downward;

– the turning point of the sector on the tractor's support cen be varied.

Moreover, the sector of the towing jig allows for an ample horizontal adjustment at the bar, as required by implements that need free swinging.

The swinging action can be limited or reduced by means of the pins (2).

Warning: *When implements connected to the PTO are used, the drawbar must be regulated in height so that it is between 150 and 300 mm (from 5.91 to 11.82 in.) below the axis of the PTO shaft.*

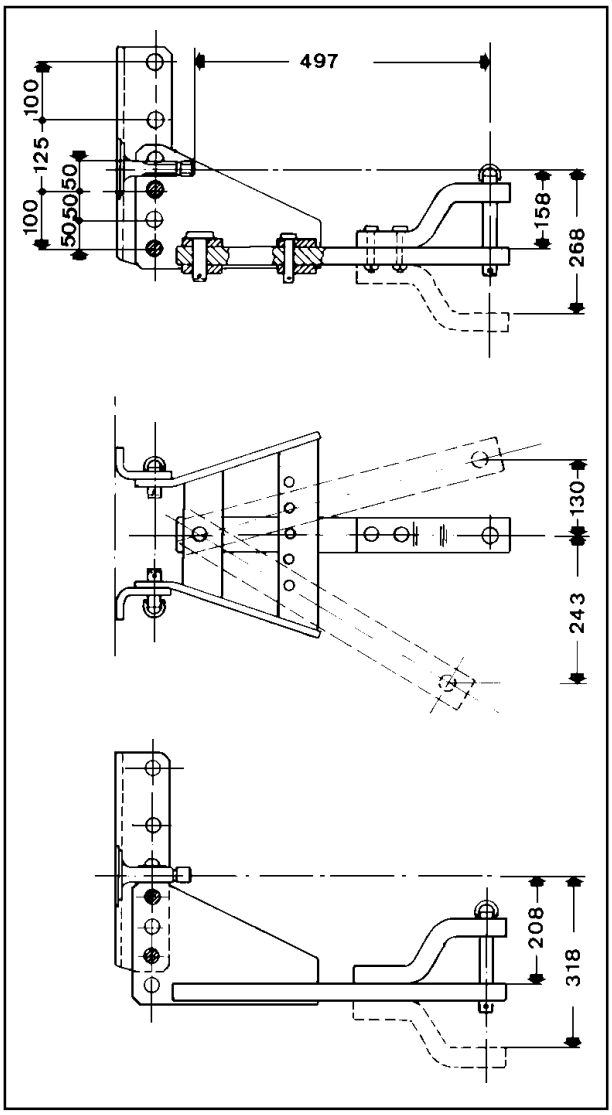


Fig.6-11- Adjustments on Class A tow hook.

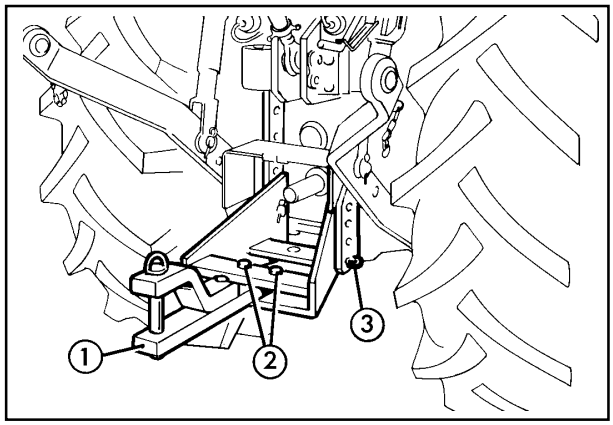


Fig.6-10- Class A rear tow hook.
1 - Drawbar
2 - Side swing limiting pins
3 - Puns to adjust height above the ground.

Technical specifications

LUBRICANTS AND FUELS

SYSTEM		Q.ty liters 60-70 80	Q.ty liters 75-85 95-105	SPECIFICATIONS	AMBIENT TEMPERATURE	AGROLUBE	TECHNICAL DATA
COOLING SYSTEM		10.5	15.5	AGROLUBE MANTOS Antifreeze in the following percentages:			Degrees°C -8° -15° -25° -35° % 20 30 40 50
FUEL TANK*	VERSION GE	43					Viscosity at 40°C, cSt / Viscosity at 100°C, cSt
	VERSION F	43					
	VERSION XL	65					
ENGINE WITH OIL FILTER		6,7 0.7	7 0.7	—	BELOW 0 °C	—	— / —
				API CE/SF	0 °C TO 27 °C	—	— / —
				API CE/SG	OVER 27 °C	KRONOS 30	— / 11.0
				API CH4 ACEA E5 MB 228.3	ANY TEMPERATURE	KRONOS LD 15W40	— / 14.5
GEARBOX WITH MECH. REVERSE SHUTTLE, POWER LIFT SYSTEM AND STEERING SYSTEM		38		API GL - 4 M.F. M 1135	ANY TEMPERATURE	SINCROS/B	— / 10.5
GEARBOX WITH POWER SHUTTLE, POWER LIFT SYSTEM AND STEERING SYSTEM (1)(2)		50		API GL - 4 M.F. M 1135 1141	ANY TEMPERATURE	SINCROS/C	— / 10.5
FRONT AXLE DIFFERENTIAL HOUSING WITH BRAKE DISCS (1)		3.5		API GL - 4 M.F. M 1135	ANY TEMPERATURE	SINCROS/B	— / 10.5
FRONT AXLE DIFFERENTIAL HOUSING WITHOUT BRAKE DISCS (Mechanical standard tractors only)		3.5		API GL - 5 MIL-L-2105 D	ANY TEMPERATURE	KRIPTOS 80W-90	— / 19.5
REAR FINAL DRIVES* FRONT FINAL DRIVES*		3.6 1.5		API GL - 5 MIL-L-2105 D	ANY TEMPERATURE	KRIPTOS 80W-90	— / 19.5
BRAKE CIRCUIT		1.0		—	ANY TEMPERATURE	XERONS RED (3)	— / —
GREASING NIPPLES		—		—	ANY TEMPERATURE	G.M.P. GREASE EP	— / —

* Optional auxiliary fuel tank (25 litres).

(1) Only use lubricants complying with LANDINI, NEW HOLLAND M2 C 86C, JOHN DEERE J 20C/D, M-F 1135 specifications. LANDINI specification provides additives and anti-noise, antisquawk, and antistick-slip properties. Use of different types of oil, or mixing other types of oil into the oil supplied with the tractor when new can lead to increased noise.
(2) Powershuttle transmission uses ONLY SINCROS / C OIL ACCORDING TO LANDINI SPECIFICATIONS
(3) AGROLUBE XERONS RED mineral based oil for braking circuits, according to LANDINI S/ENG/I 102 specifications.

CAB

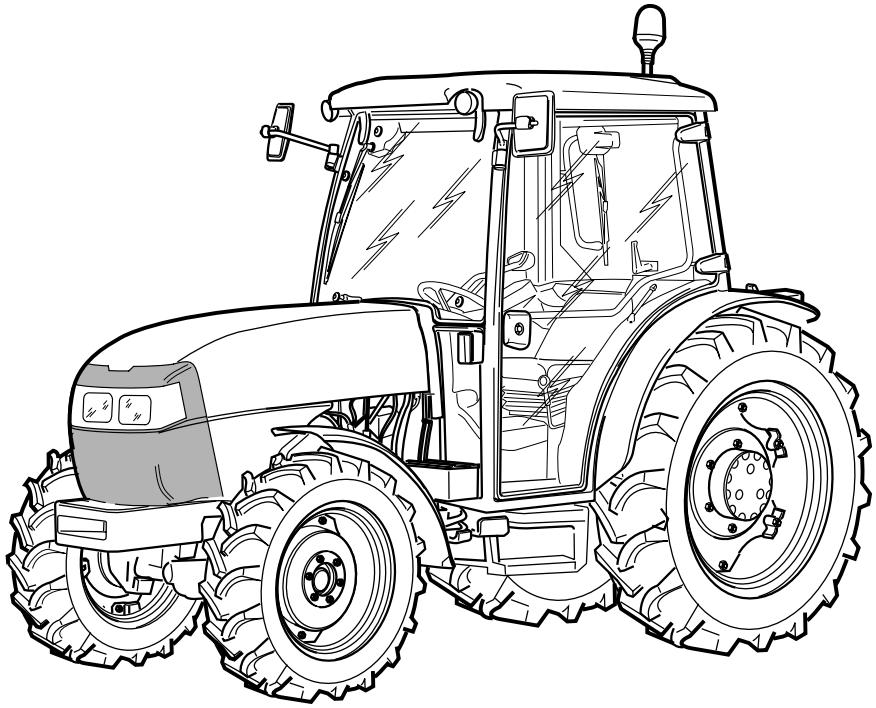


Fig.7-1

WEIGHTS AND DIMENSIONS
Fig. 7-1

	60F	70F	80F	75 F	75 XL	85 F	85 XL	95 F	95 XL	105 F	105 XL
Front tyres	280/70R18	280/70R18	280/70R18	280/70R18		280/70R18	280/70R20	280/70R18		280/70R18	
Rear tyres	14.9R24	14.9R24	14.9R24	14.9R24		14.9R24	14.9R28	14.9R24		14.9R24	
Total weight without ballast, 2WD ..... Kg	2650	2650	2650	2760	-	2760	-	2760	-	2760	-
Total weight without ballast, 4WD ..... Kg	2825	2825	2825	2990	3010	2990	3010	2990	3010	2990	3010
Height above cab ..... mm	2260	2260	2260	2260		2260	2260	2260		2260	
Total length with ballast ..... mm	3600	3600	3600	3709		3709		3709		3709	
Wheelbase 2WD ..... mm	2065	2065	2065	2174	-	2174	-	2174	-	2174	-
Wheelbase 4WD ..... mm	2017	2017	2017	2134		2134		2134		2134	
Front track widths Rear track widths	SEE TRACK WIDTH TABLES										

This section of the manual solely deals with the cab operation and maintenance instructions

Cab description

Cab components - Fig.7-2

1 - Openable windscreen
2 - Adjustable rear view mirrors
3 - Front field lights
4 - Rotating beacon
5 - Openable rear door
6 - Left-hand side door
7 - Right-hand side door

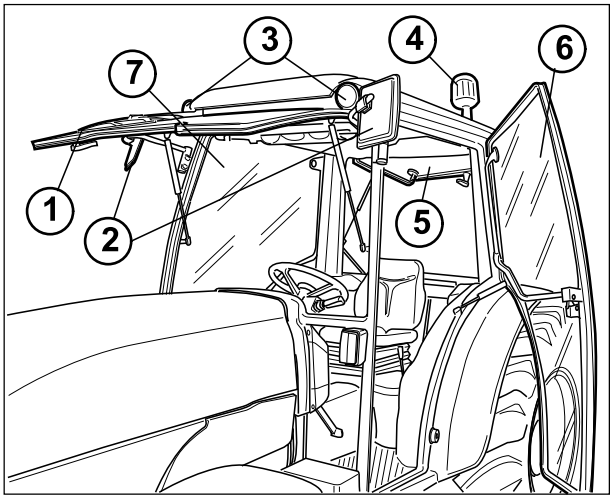


Fig.7-2

Front and rear field lights

The lights operate when the ignition key has been turned to the contact position.

The field lights are adjustable. You can therefore direct the light beam in the most suitable direction, depending on the job in hand.
To turn on the lights, press down the switches (1 and 4, Fig. 7-3) as indicated.

– (1) Rear light switch.
– (4) Frront light switch.

– Rotating beacon switch (2-Fig.7-3)
– Front window wiper and washer switch (3-Fig.7-3)

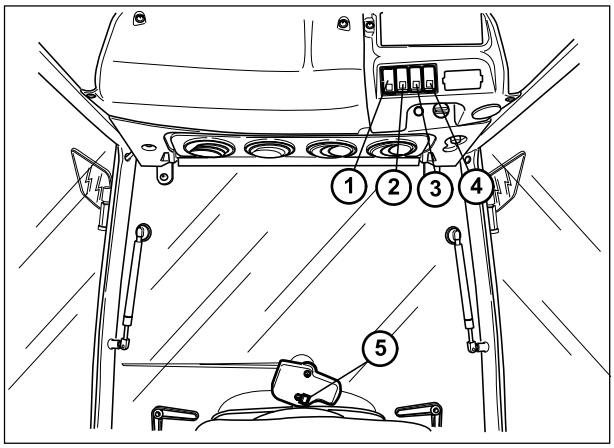


Fig.7-3

Front/rear windscreen wiper - Fig.7-3 and 7-4

(Operates when the ignition key has been turned to the contact position)

5 - Front windscreen wiper (Fig. 7-3)

6 - Rear windscreen wiper (Fig. 7-4)

Operation of the two switches:

Pos. 1 - Wiper off
Pos. 2 - Switch down to the first position: wiper on.

Front window wiper and washer (3-Fig.7-3)

***CAUTION:** Do not open the front, rear or side windows, nor any doors, during work. The noise inside the cab would increase to such an extent as to require the operator to wear ear muffs or other individual protection gear against noise.*

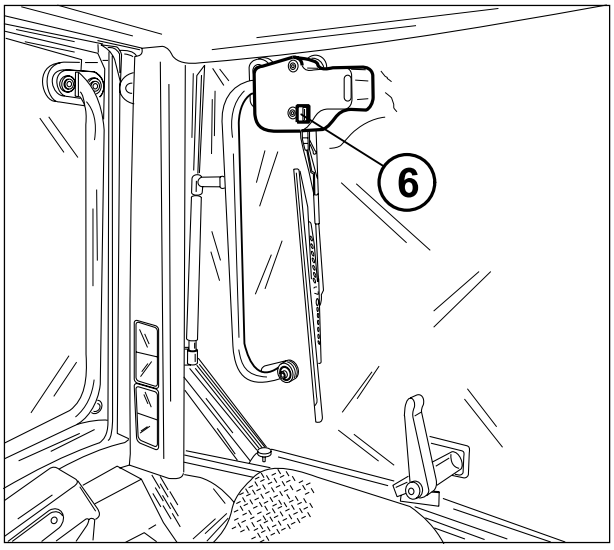


Fig.7-4

Controls within the cab - Fig. 7-5

1 - 4 front air vents
2 - Cab light
Press one side of the glass to switch the light on.
3 - Presetting for radio and speaker installation
4 - Fuse box
5 - Field light and rotating beacon switch

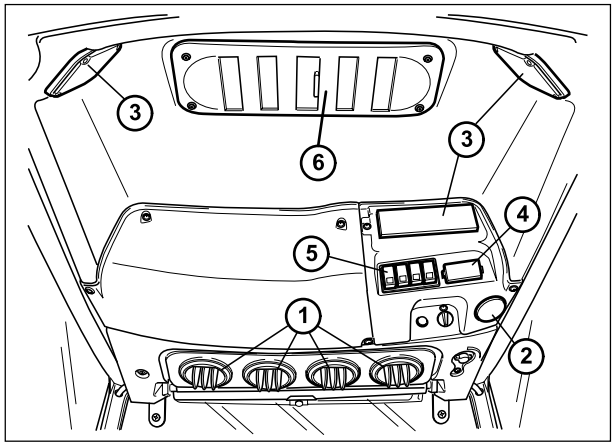


Fig.7-5

Ventilation – Fig. 7-5

The cab ventilation is operated by means of 4 front air vents (1). Position the air flow in the required direction by turning the vents.

The air that flows into the cab can be drawn from either inside the cab or outside by means of the vents.

Internal air recycling (6-Fig.7-5)

– Closed. Air sucked up from the outside.
– Open: Air sucked up from inside the cab.

RECIRCULATION VENT (6-Fig.7-5)
Slide the louver toregulate amount of fresh air intake/ recirculationof air within the cab.

Conditioner activating button (1-Fig. 7-6).

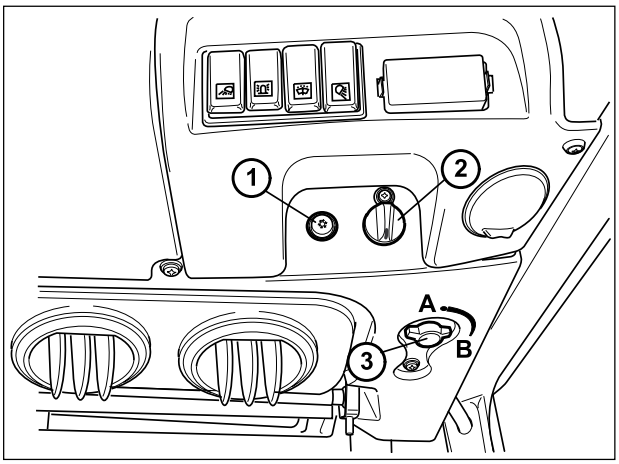


Fig.7-6

Heating – Fig. 7-6

Use knob (3) to adjust the temperature of the hot air.

Pos. A - Maximum heating

Pos. B - Heating off

Select the speed of the electric fan with knob (2), to adjust the quantity of air let into the cab.

Electric fan – Fig. 7-6

You can vary the amount of air let into the cab by selecting one of the speeds provided by the electric fan.

Turn the knob (2) clockwise to increase fan speed.

Fan switch (2)
0 - OFF
1 - Slow
2 - Medium
3 - Fast

AIR CONDITIONED CAB

The cab can be fitted with an air conditioning system on request.
Besides being able to provide an optimum temperature in the cab, this system also lowers the degree of humidity in the air.

SAFETY NOTES

The air conditioner is a safe system that is able to ensure lasting and risk-free use. However, it is important to comply with certain simple precautions (listed below) in order to prevent possible accidents.

- Never work on the conditioning system yourselves. Always contact the specialized technicians of the Assistance Service (Fig. 7-7).

- Keep naked flames well away from the air conditioning system (Fig. 7-8) as leaking coolant could give rise to a deadly gas: ***phosgene***.

- The mixture of oil and coolant in the air conditioning system is under pressure. Never ever loosen any unions or tamper with the pipes.
  For the same reason, you must never unscrew the compressor's oil level check plug.

- Coolant can freeze the skin and particularly the eyes.
  Proceed in the following way if accidents occur:
  – if coolant has splashed into the eyes, wash them out immediately with a few drops of mineral oil, then continue to wash them with a solution of boric acid and water (one teaspoon of acid in 1/4 of a cup of water) and immediately seek medical help;
  – areas frozen by coolant fluid can be treated by progressively warming the injured zone with cold water and then applying a greasy cream. However, always seek medical help if such accidents occur.

- Keep the air conditioning system well away from heat sources as explosions could occur (Fig. 7-9).

Fig. 7-7

Fig. 7-8

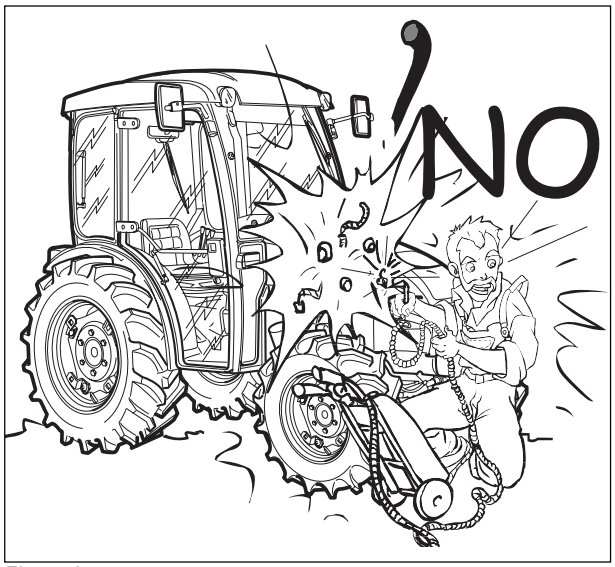


Fig. 7-9

CAB AIR CONDITIONING CONTROLS (on request)

How to turn on the conditioner and regulate the temperature

Conditioner activating and regulating button

Operates when the ignition key has been turned to the contact position.
Air conditioner switch (1 - Fig.7-10):
- Press to turn on the air conditioning system.
- Press again to turn off the air conditioning system.

CAUTION:
- The air conditioner will not operate when the engine is at a standstill as the compressor is operated by the engine itself.
- Make sure that the air conditioner control is in the off position before starting the engine.
- Always turn on the electric fan before operating the air conditioner.
- The conditioner cannot operate when the electric fan is off.

Fan control knob
You can vary the amount of air let into the cab by selecting one of the speeds provided by the electric fan.
Fan switch (2 - Fig.7-10)
0 - OFF
1 - Slow
2 - Medium
3 - Fast

Heater control knob (3 - Fig. 7-10)
Use knob (3) to adjust the temperature of the hot air.

Pos. A - Maximum heating
Pos. B - Heating off

Air vents
The flow of air let into the cab can be set in the required direction by turning the 4 front air vents (4 - Fig. 7-10).

Internal air recycling (6-Fig.7-5)
– Closed. Air sucked up from the outside.
– Open: Air sucked up from inside the cab.

Defrost Control Operation
- Position the air flow in the required direction by turning the vents (4).
- Press (1) to turn on the air conditioning system.
- Use knob (3) to adjust the temperature of the hot air.

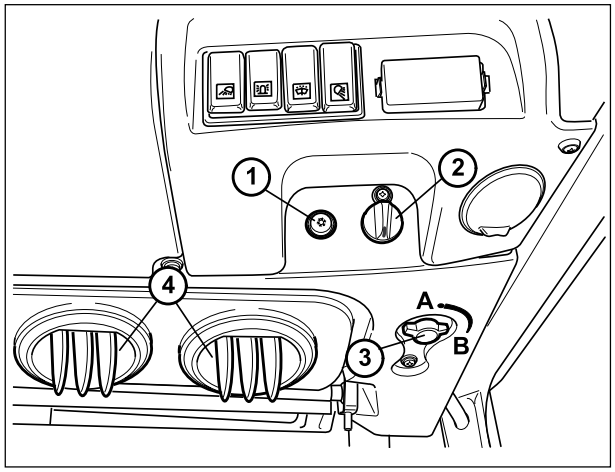


Fig. 7-10

Use of the air conditioner
Use of the air conditioning system allows you to obtain cool and dehumidified air or hot and dehumidified air.
It is operated in the following way (Fig. 7-10).

Heater control knob
Before turning the conditioner on, make sure that the heating knob (3) is on the off position.
Pos. B - Heating off

Starting
Start the engine and turn on the electric fan, then press the button (1) to operate the conditioner.

Regulation
To regulate the air conditioning in the cab, always open the recirculation air vents (6- Fig. 7-5) when the conditioner operates and keep the doors and rear window closed.

After a lengthy period exposed to the sun, bring the temperature inside the cab to the correct level by turning on the conditioner whilst the tractor is on the move and by opening the rear window for about one minutes in order to allow the hot air to escape.

Stopping
Before you stop the engine, always turn off the conditioner by setting button (1) to the off position and turning the electric fan knob (2) off.

WARNING: If the tractor is to remain unused for a long period of time, or if the system is not used, remember to allow the air conditioner to operate for about 15 minutes each week.
This precautionary measure prevents gas from leaking from the compressor

Cab air filter Fig. 7-19

WARNING:Remember that the cab filter is not suitable for chemicals in general.
Absolute protection against these products can therefore only be achieved by taking the precautional measures required by the degree of harmfulness of the actual products used.
***It is essential to strictly conform to this latter precaution** for all types of filter whose use requires compliance with the envisaged operation and maintenance instructions.*
However, even use of filters to protect against chemicals in general does not exempt operators from taking all the personal precautions recommended for use of such products.
These specific filters must only be mounted when the actual chemicals are being used and must then be replaced with the normal paper filters supplied with the machine at the end of each treatment.
Do not use them during the other processes since the dust would quickly clog them.
Carefully comply with the operating instructions on the filter packages or labels.
Contact your Dealer if specific filters against chemicals must be used.

CAUTION: If the cab is washed and the special filter has not been demounted, take care to prevent the jet of water from splashing on to the protective grille (Fig. 7-12) otherwise your cab's special filter will be irreparably damaged.

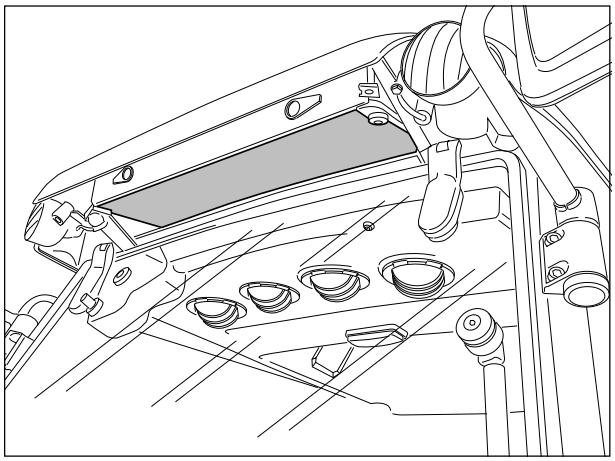


Fig. 7-11

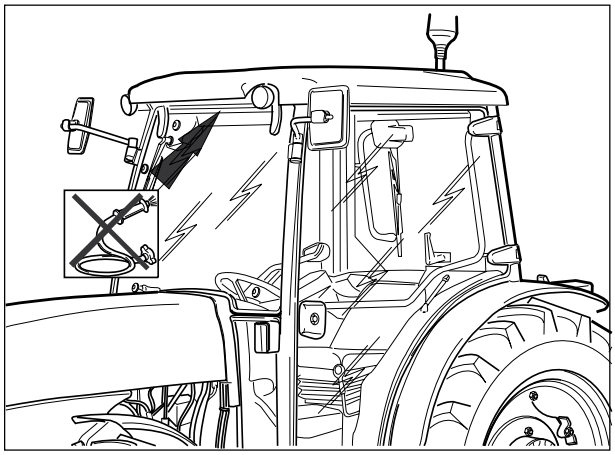


Fig. 7-12

Fuses – Fig. 7-13

The box (1) houses the fuses that protect the electrical system of the cab.

Fuse	Function - Fig. 7-13	Amp.
1	Window washer reservoir	10
2	Rear windscreen wiper	10
3	Rear field lights	10
4	Front field lights	15
5	Positive under key	15
6	Radio	5
7	Ceiling light, rotating beacon	15
8	Fan speed control	25
9	Front windscreen wiper	10
10	AC switch and AC relay	7,5
11	Thermostat Anti-ice	5

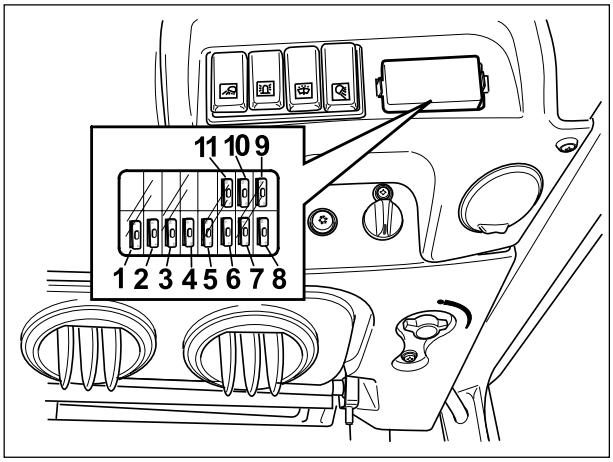


Fig.7-13

PERIODICAL INSPECTIONS

At least once every three months:

– remove any foreign bodies from between the evaporator and condenser fins;

– check the tension of the compressor belt;

– allow the engine to run at a rate of 1500 rpm;

– check the conditions of the pipes, unions and supporting brackets;

– make sure that the drain pipes are efficient and remove the condensation from the evaporator;

– make sure that the screws and fixing nuts of the pulleys and compressor are well tightened.

MAINTENANCE

If the conditioning system remains unused for a long period of time, it must be turned on for a few minutes each month to allow the oil to circulate around the circuit and to keep the seals in an efficient condition.
Only operate the conditioner when the engine is hot and the temperature in the cab has reached 20°C.

YEARLY MAINTENANCE

Have your Dealer's specialized personnel carry out the following operations at the beginning of the season:

– check the level of the oil in the compressor and top it up if necessary;

– make sure that the system is tight by means of a leak tester and top up the HFC 134a gas if necessary, or:

– replace the dehydrator filter only if strictly necessary;

– carry out a functional test on the system.

GENERAL CAB MAINTENANCE (ALL VERSIONS)

After having serviced the external parts of the cab, proceed with the following inspections:

1. Periodically check to make sure that no water has collected in the zones covered with mats or upholstery.
2. Protect the hinges and locks of the doors, sun roof and openable windows with water-repellent lubricating products.
3. Use special cleaning products to clean the windows.
4. Detach the windscreen wiper and sprinkle talcum on the rubber wiper.
5. Leave the doors or sun-roof partially open.

SPECIFICATIONS

Coolant fluid ..... HFC 134 a

CAB UPHOLSTERY

***CAUTION:** Use water and a neutral detergent to clean the polyurethane cab upholstery or the specific products available on the market for cleaning car interiors.*
DO NOT use: solvents and hydrocarbon by-products, ketonic solvents, aromatic solvents or cleaning spirits of any nature.

CAB - MAINTENANCE ON REQUEST

Operation 1

Cab air filter Fig. 7-14

1 - Fig.7-14 - Unscrew fixing knobs of the cover.
2 - Remove the cover.
3 - Unscrew the two knobs (2) fixing the filter.
4 - Remove the filter (1) and clean as follows (Fig.7-14b):

– delicately tap it on a flat surface with the external side pointing downwards;

or:

– use a jet of compressed air at a pressure of less than 6.9 bar (7 kg/cm2);

Clean the filter housing with a cloth.
When the filter is remounted, the cartridge (1) must be oriented as indicated on the cartridge itself.

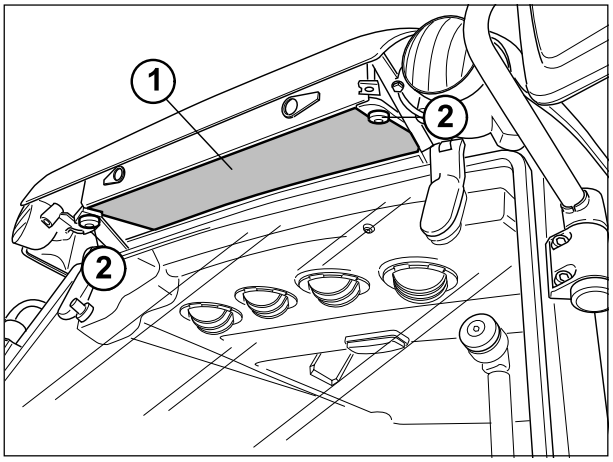


Fig.7-14

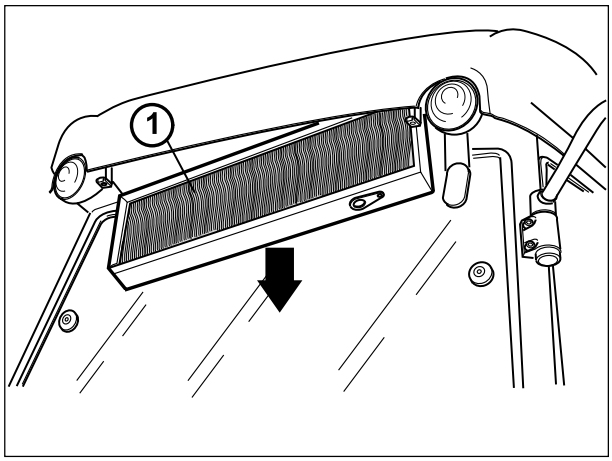


Fig.7-14b

Operation 2

Compressor belt Fig. 7-15

Periodically check the tension of the compressor belt.
If the belt (1) is slack, loosen the fixing screw (2) and move the idler (3) until the correct tension is obtained.

NOTE: *Replace the belt if it is cracked or needs frequent adjustments.*

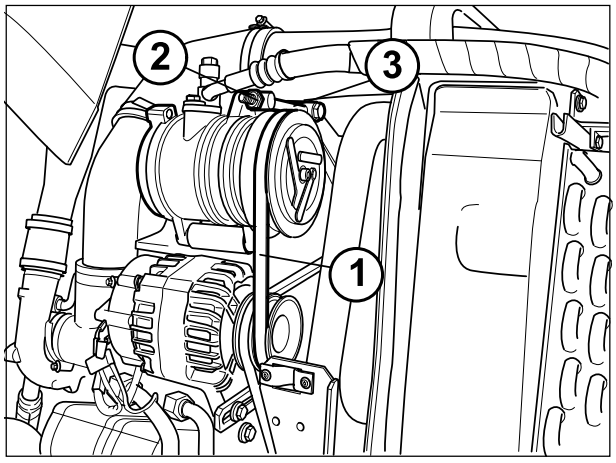


Fig.7-15

Operation 3

Cleaning the engine radiator and the air conditioning condenser Fig. 7-16

Lift the bonnet (Fig. 7-16) to access the air conditioning condenser (4), the engine coolant radiator (2) and the transmission oil radiator (3).

Fig. 7-16.
1 - Disconnect the horn connections (5).
2 - Loosen the two clamps (4 and 6) from the air conditioning hoses.
3 - Loosen the knob (1) fixing the air conditioner condenser.
4 - Grasp both ends of the condenser and lift it carefully in order not to damage the cooling fins. Shift the hoses (5) as required to make the operation easier.
5 - Clean the engine radiator surface (2) by means of an air jet from the inside to the outside.
6 - Clean also the condenser surface in the same way. Take care to direct the air jet from the inside to the outside.
7 - Clean also the transmission oil radiator fins (3) in the same way.

Check that the surfaces you clean are not warped. In this case the damage must be repaired.

Proceed in inverse order to remount (operations 4 to 1) and put the condenser on its support again. Take care not to damage the cooling fins.

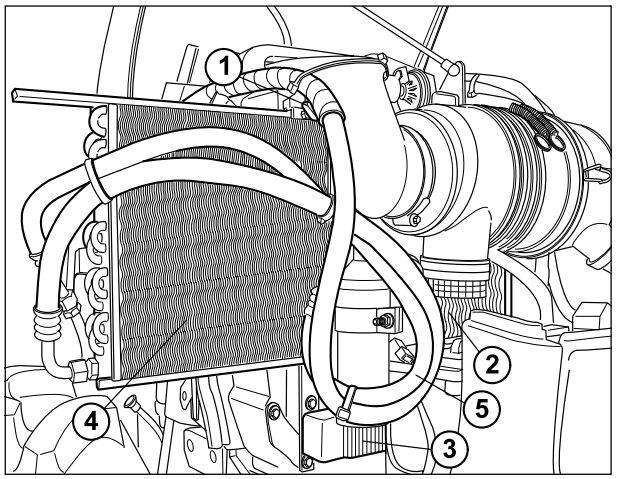


Fig.7-16

Operation 4

Window washer liquid reservoir Fig. 7-17

Check the window washer liquid level (1) at regular intervals. Fill it up if required.

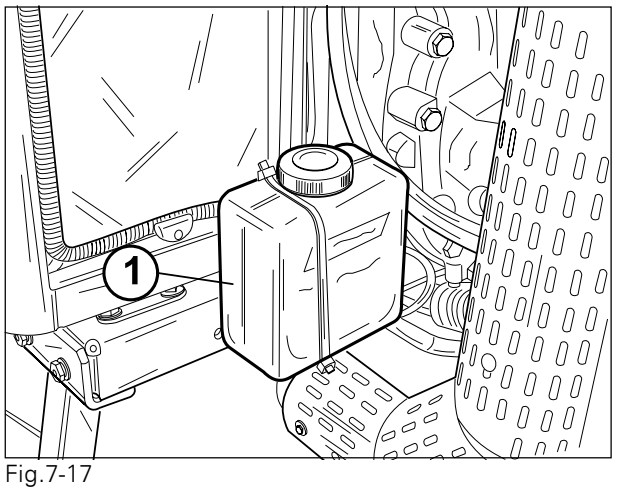


Fig.7-17

CAB
AFTER EVERY 1000 HOURS
SERVICE OR ONCE A YEAR

Operation 5

Cab air filter Fig. 7-18

Remove the cover (1-Fig.7-18) (Operation 1) and replace the filter cartridge inside (1-Fig.7-18b).

NOTE: *The filter must be replaced every time the air conditioning system is serviced. In such occasions, check the oil level in the compressor.*

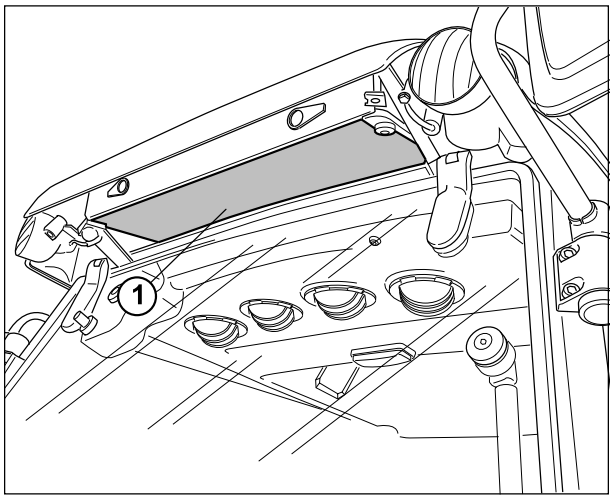


Fig.7-18

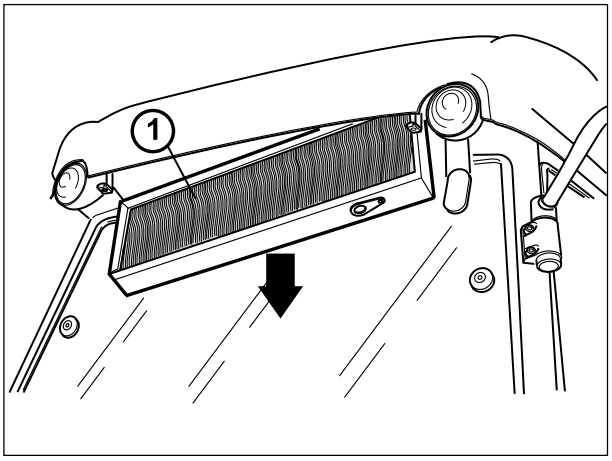


Fig.7-18b

Operation 6

Compressor Fig. 7-19

Have the air conditioning system operation checked. Also check the lubricating oil level in the compressor (1).

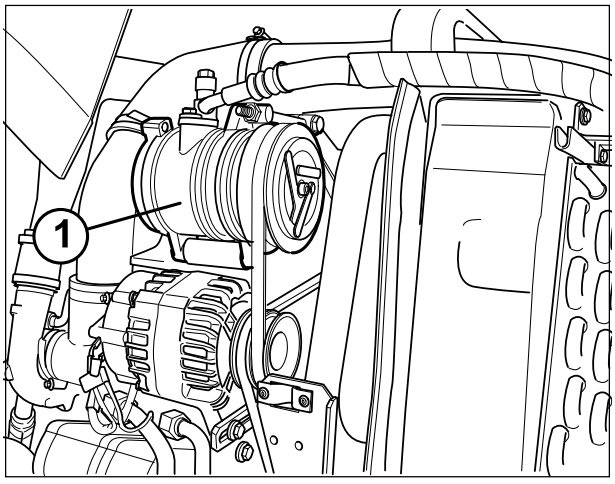


Fig.7-19

ELECTRONICALLY CONTROLLED HYDRAULIC POWER LIFT

Description

The electronically controlled hydraulic power lift is available as an option on certain tractor models, depending on the requirements of the particular market.

Electronic control of the power lift gives a number of major benefits. In particular, control and response signals can be processed and action taken to adjust for variations in ground conditions encountered by the implement in a fraction of the time possible with manual controls.

To obtain the best results from the electronic control system, you must be fully familiar with the controls on the power lift control panel. A full description is given below.

Power lift control panel (Fig.7-20)

1 - 3-position up/down switch.
A: Lowering - Work position. This depends on the way the controls (6 and 8) are regulated.
B: Stop - The lift arms are unable to move in any way in the stop position.
C: Lifting - Transport: the fully raised position is established by the limiter (4).

2 - Down speed selector:
0 - Does not lower. Lock - Turned in an anti-clockwise direction.
Max. - Fast descent - Turned clockwise.

3 - Electronic power lift "Check Control" indicator light.

4 - Maximum height limiter:
Minimum height: turned anti-clockwise.
Maximum height: turned clockwise.

5 - Up movement indicator light.

6 - Function selector:
- Position Control, turned anti-clockwise.
- Draft Control, turned clockwise.
- Intermediate position: mixed Draft and Position Control (INTERMIX).

7 - Down movement indicator light.

8 -Implement work depth/height control:
0 - Maximum depth.
10 - Max. height from ground.

9 - Transport shock absorber engaged indicator light and button

10 - Quick soil engagement button

11- External power lift controls - Buttons on the fenders (Fig.7-22).

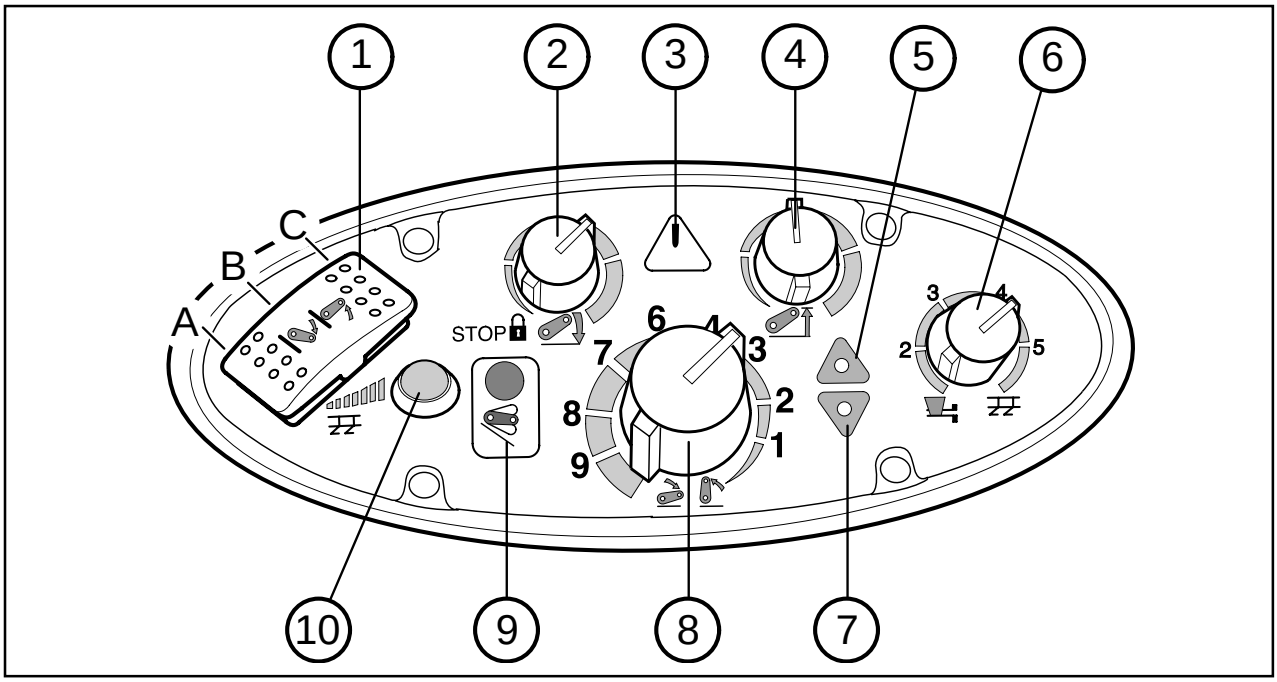


Fig.7-20- Electronic power lift control panel.

USE OF THE ELECTRONIC POWER LIFT

Enabling the power lift (Fig.7-21)

The power lift incorporates a safety device which disables the hydraulic power lift controls when the engine is off or if the external controls have been used. This prevents accidental movement of the lift arms and links as a result of interference with the controls or settings while the tractor was stopped. When the engine has been started, or after the external controls have been used, simply turn the control switch (1) to position C.

- If the switch is already in position C, turn the switch (1) to position A, then back to position C again.

- If the switch (1) is not in position C and the lift is lowered, turn switch (1) to position C.

WARNING: The lift arms will rise as soon as the control panel is enabled. Limit the max. lifting height with the control (4 - Fig.7-21) before re-activating the electronic power lift.
- If you need to stop lift movement immediately, simply turn the switch (1) to position B.
- Before you enable the power lift controls, check that the settings of controls (6 and 8) do not cause any dangerous movement of the implement.

NOTE: *The electronic power lift control system also incorporates safety devices which disable the lift functions if any of the following faults are detected:*
1 - Insufficient battery power.
2 - Short circuit in the power line.
3 - Position-control circuit malfunction.
If the electronic power lift fails to operate correctly after the controls have been enabled as instructed above, have the circuits checked by your local dealer.

Check-control indicator light

When the engine is started, the check-control indicator (3) lights up. Once the electronic power lift is enabled as already described, the check-control indicator should go out.
If the indicator lights up and flashes during work, consult your local dealer who will be able to locate the fault.

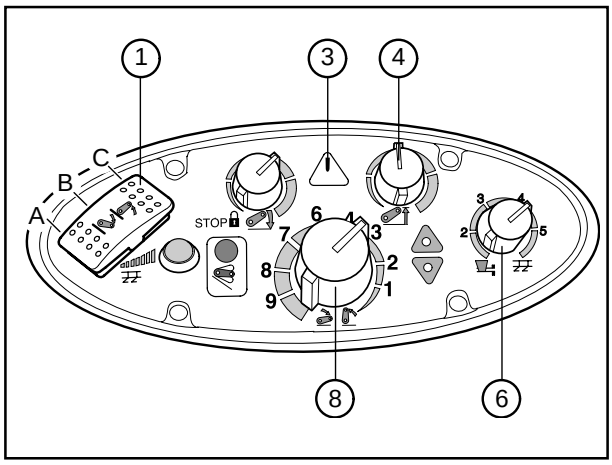


Fig.7-21 - Control panel - Activating the electronic power lift.

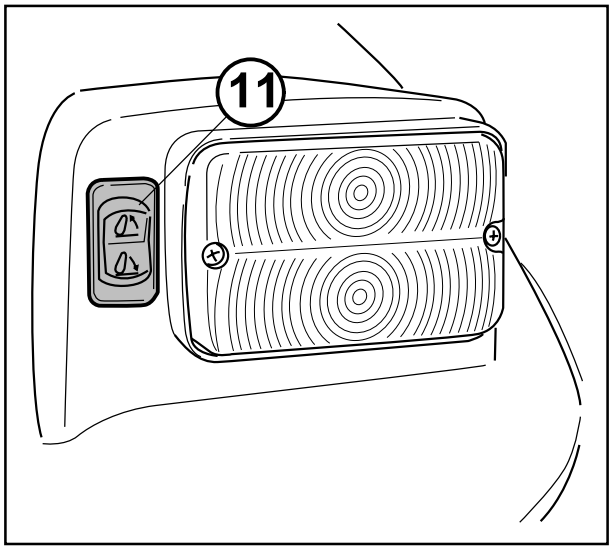


Fig.7-22 - External controls (11) for raising and lowering the lift arms.

Hitching an implement

From the internal control panel (Fig. 7-23)

- Turn the power lift control switch (1) to position C to enable the power-lift control panel.
- Turn the control switch to the working position (A).
- Turn the function selector (6) anti-clockwise to select position control mode.
- Turn the knob (8) anti-clockwise to lower the arms. The arms-down indicator (7) should light up.
- Manoeuvre the tractor to the right position and hitch the implement's ball-ends on to the ends of the links. Fit safety pins to secure the hitch. Hitch up the top link.
- Turn knob (10) clockwise to raise the implement. The arms-up indicator (7) should light up.

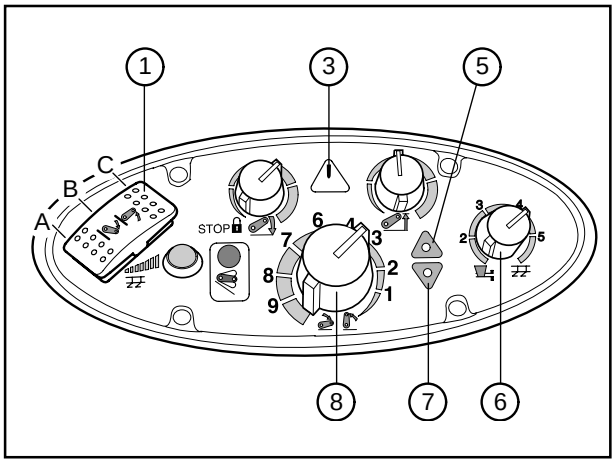


Fig.7-23 - Control panel - Hitching an implement from the driving seat.

With the external control buttons (Fig. 7-22)

There is no need to enable the power lift in order to use the external control buttons (Fig.7-22).

To use the external controls, just press on the buttons to raise or lower the lift arms. Now enable the power lift control panel by means of the switch (1).

NOTE:
- Arm movement stops as soon as the buttons are released.
- Descent speed is 30% slower than max. speed with the external controls. Down speed regulation remains disabled.
- To enable the control panel controls after the external ones have been used, release the safety device by setting the switch (1 - Fig.7-24) to position C and then to working position (A).

WARNING: Always stand at a safe distance from the implement and the three-point linkage when operating the external control buttons.

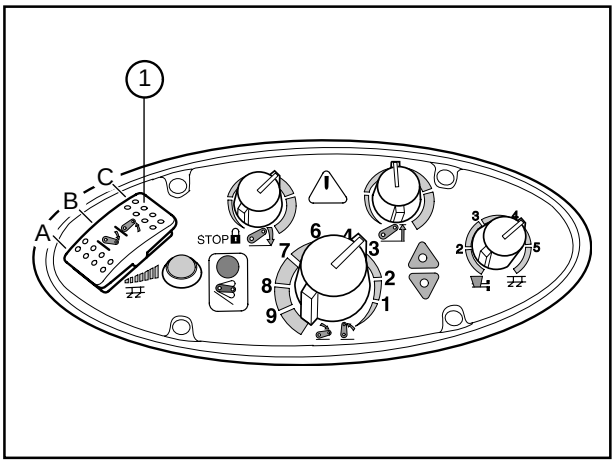


Fig.7-24 - Control panel - Hitching an implement with the external controls.

Transporting implements (Fig.7-25)

- Select the maximum transport height with the selector (4).
- Raise the three-point linkage by turning the switch (1) to position C.
- Set the selector (6) to position control mode (Pos. 1) by turning it in an anti-clockwise direction.
- Set the down-speed selector (2) to position (0) (lock) to prevent any accidental lowering movement should the controls be accidentally operated.

WARNING: If the control lever (1) is moved to the links down position (A) and the work height control knob (8) is moved, the arms could be lowered. Set the lowering speed control (2) to (Pos. 0), (lock) to prevent any accidental movement.

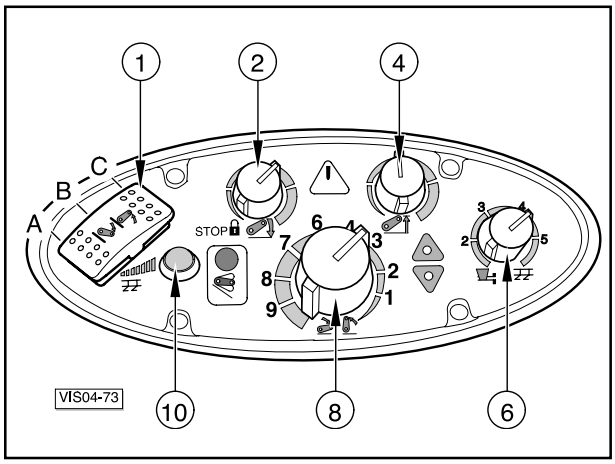


Fig.7-25 - Control panel - Transporting implements.

Shock absorber function in the transport position (Fig.2-26)

This function is activated by moving the selector (1) up (c) and pressing the button (9). Indicator light (9) will come on.

Press the button (9) again to deactivate the shock-absorber function in the transport position. Indicator light (9) will go out.

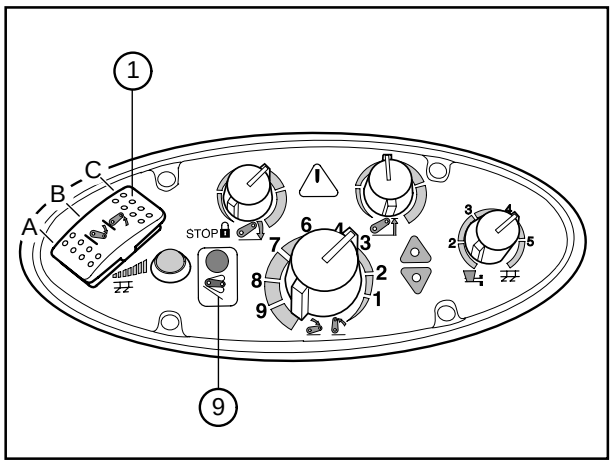


Fig.7-26 - Control panel - Shock absorber function during transport.

Operating the power lift

- Select the power lift operating mode by means of the mode selector (6 Fig.7-25).

Position 1	Turn the knob anti-clockwise for position control mode. The implement will remain at a constant height or depth.
Position 6	Turn the knob clockwise for draft control mode. Use for ploughing and similar operations that require constant tractive force.
Intermediate positions (2 - 3 - 4 - 5)	"Intermix" mode. Combining position control and draft control; for use on variable soils or with subsoilers, etc.

- Use the selector (2) to set a suitable descent speed for the type of implement being used.
- Set the switch (1) to working position (A).
- Turn the control knob (8) to obtain the correct working depth/height.

Working with tillage implements (Fig. 7-27)

- If the implement pitches (makes large lifting and lowering adjustments) in draft control mode, turn the mode selector knob (6) anti-clockwise to introduce an element of position control (Intermix).
  The sensitivity of the electronic power lift to variations in the traction force required in working conditions is automatically controlled and thus the operator need not intervene to make corrections.

Intermix/draft/position control adjustments (Fig. 7-28)

Function selector
Tillage work: position 3 or 4.
Ploughing: positions 3 - 4 - 5.
Light soil turning: positions 2 - 3.
Grubbing: position 3 or 4.
Carried implement: position 1 (position control).

These settings are purely indicative and may vary depending on the implement used and the soil.

Headland manoeuvres (Fig. 7-27)

- Raise the implement at the end of the field by setting the switch (1) to position C. The arms lift to the height set on the lift height limiter (4). Adjust the lift height limiter so that if a drive shaft is connected between the PTO and the implement, it is not twisted into narrow angles. This will also avoid wasting time lifting the implement to transport height.

- To re-engage the implement, simply turn the switch (1) to the working position (A). The implement will lower at the speed set with selector (2) until is reaches the position selected with knob (8).

- Depress the orange button (10) to make soil engagement of deep working implements easier.

Float mode (Fig. 7-27)

Used for implements that rest on the ground and follow its reliefs.

- Turn switch (1) to position (A).
- Turn knob (8) to position (10), fully anti-clockwise as far as it will go.

WARNING: Comply with the maintenance and safety regulations governing the electrical system of the tractor to safeguard and protect the electronic power lift.

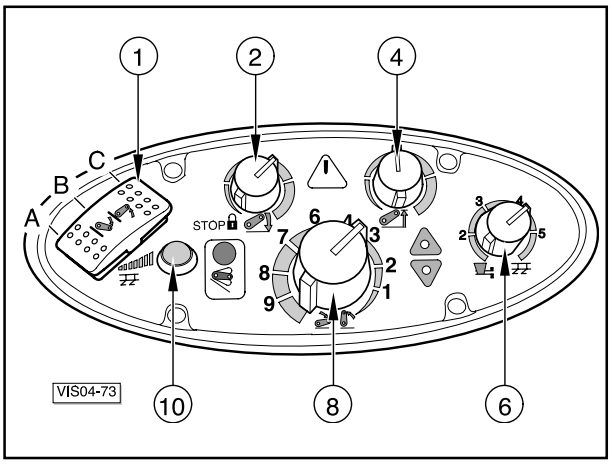


Fig. 7-27 - Control panel - Use during work

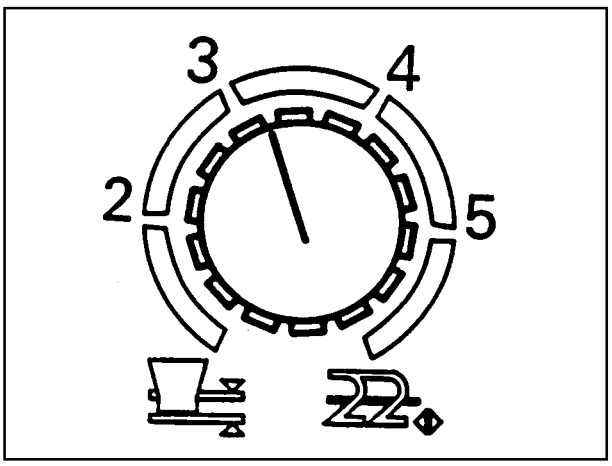


Fig. 7-28- Intermix/draft/position control regulation.

ELECTRONIC POWER LIFT CONTROL - OPERATING TABLE SUMMARY

(See Fig. 7-20 for the references)

OPERATION	HEIGHT LIMITER (4)	(1) LIFTING LOWERING SWITCH (11) QUICK SOIL ENGAGEMENT	WORK DEPTH/ HEIGHT CONTROL (8)	MODE SELECTOR (6)	LOWERING SPEED (2)	NOTES
Enabling control	Pos. 0 - Minimum	Pos. A to Pos. C or Pos. C to Pos. A	—	—	0 - Minimum	Use controls (6) and (8) to prevent arm movement
Hitching or unhitching implements using the controls on the panel	Max. height pos. Turn clockwise	Pos. A work	Set to desired height	Position control Up: fully anti-clockwise	Set to intermediate pos.	—
Hitching or unhitching implements using external controls	Not used	Pos. A or B	—	—	—	Re-enable control panel after use
Transporting implements	Max. height Turn anti-clockwise	Pos. C	—	—	Pos. 0	—
Working in position control mode	Set to max. desired height	Pos. A - work	Set to desired height / depth	Up: fully anti-clockwise	Set to desired position	Use switch 1 for headland turns
Working in draft control or Intermix mode	Set to max. desired height	Pos. A - work	Set to desired depth	Down: fully clockwise Intermediate positions for Intermix	Set to desired position	Use switch 1 for headland turns
Headland turns	Set to max. desired height	Pos. C	—	—	—	Do not interfere with work settings
Start of furrow	—	Pos. A - Working above soil Button 11 - Quick soil engagement for deep working implements	—	—	—	Do not interfere with work settings

Triple pump and front control valves

Fig. 7-29

On request a triple pump (2) can be installed, to be coupled to the front control valves (3), which are fed by a separate circuit.

Maximum 3 control valves with flow divider.

1st Control valve for hydraulic motors, coupled to the flow divider.

2nd Control valve with floating position.

3rd Standard control valve, electrically controlled by means of buttons.

The three pumps feed three separate and independent circuits:

1 - Steering circuit and transmission hydraulic services: 29,9 lt/1' with engine at 2200 RPM, max. steering pressure 160 bar.

2 - Front control valves circuit: 39,6 lt/1' with engine at 2200 RPM, max. steering pressure 180 bar.

3 - Power lift and rear control valves circuit: 29,9 lt/1' with engine at 2200 RPM, max. steering pressure 180 bar.

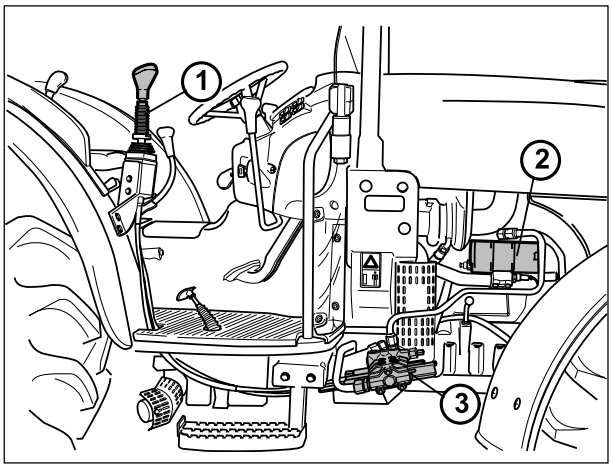


Fig. 7-29

Joystick - Fig. 7-30

The joystick (1) controls the front control valves and is very useful and handy when operating front loaders and other front mounted implements.

The joystick (1) is provided with a stop (2) to lock the lever.

Pull up the stop (2) whenever the joystick has to be used.

Press the stop (2) downwards to lock the lever again.

The stop has two coloured marks.

A - Green: stop (2) up - free movement.

B - Red: stop (2) downwards - locked lever. In this position the red mark comes out (B).

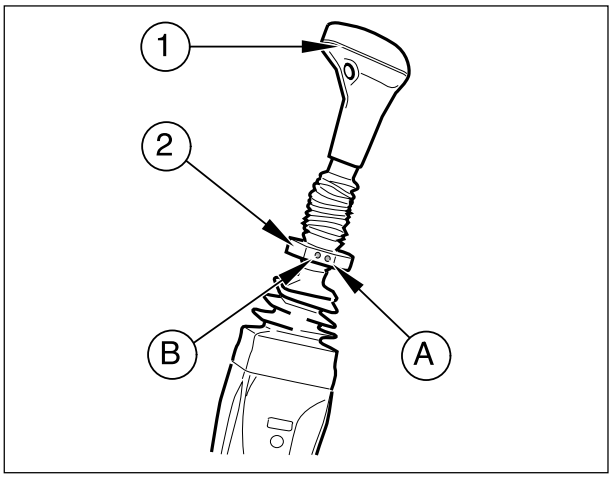


Fig. 7-30

Joystick operation - Fig.7-31

Fig.7-31 shows the operating positions of the joystick:

1 Lowering the 1st control valve

2 Lifting the 1st control valve

3 2nd control valve in float position

4 Lowering the 2nd control valve

5 Lifting the 2nd control valve

***CAUTION:** The lift and front control valve circuits should not be used at the same time and continuously. Both circuit should be used at intervals.*

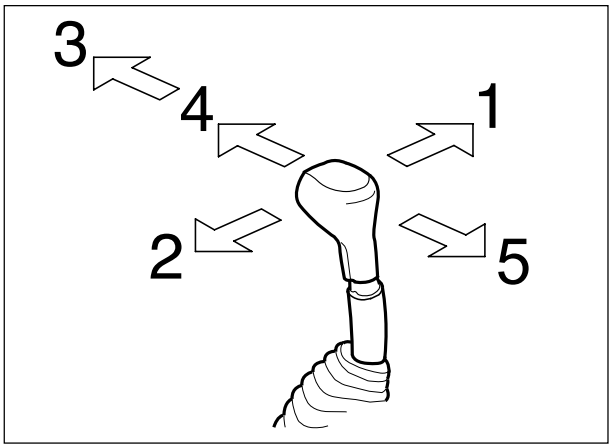


Fig. 7-31

Buttons controlling the third front electric control valve - Fig.7-32

The joystick (1) has two buttons (2 and 3) to control a front electric control valve.
The lever is provided with a safety switch (4) to override the electric control.
Press the safety switch button (4) to enable the buttons (2 and 3): the button is lighted to show it is activated.
Press the safety switch button (4) once more to disable the buttons (2 and 3): the light in the button goes out.
The control valve for hydraulic motors is coupled to a flow divider that allows the flow to the hydraulic motor to be regulated. The flow in excess feeds the downstream control valves.

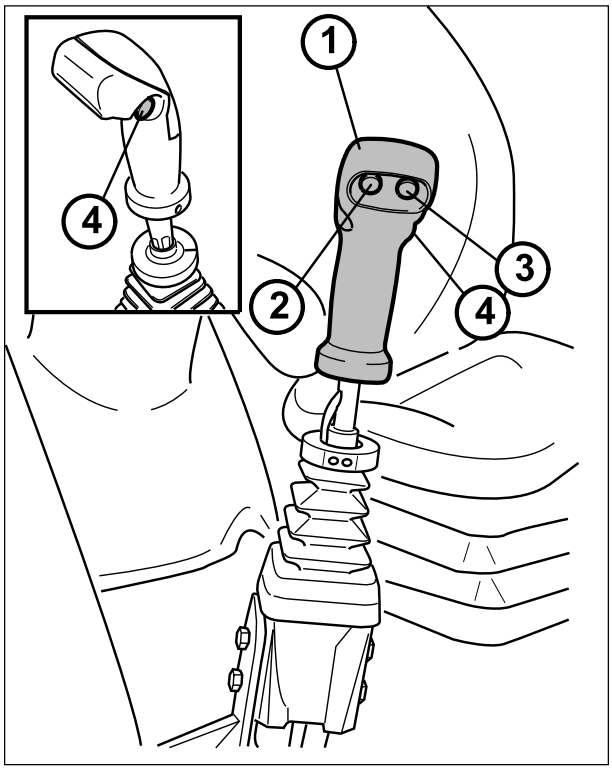
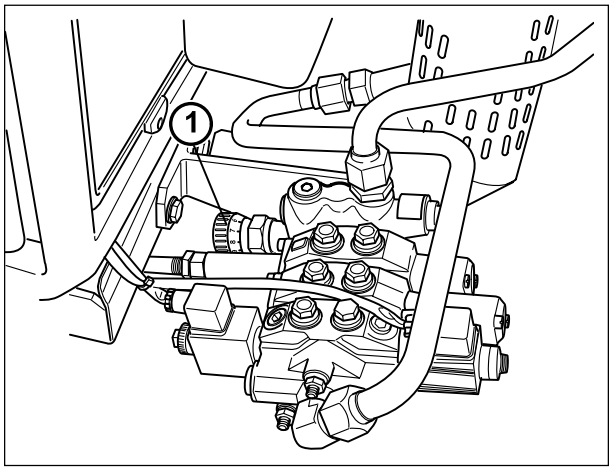


Fig. 7-32

Flow divider - Fig.7-33

The 1st control valve for hydraulic motors is coupled to a flow divider (1) that allows the flow to the hydraulic motor to be regulated.
If turned in clockwise direction: restriction of the flow to hydraulic motor
If turned in anti-clockwise direction: increase of the flow to hydraulic motor
The exceeding flow may be used by the control valves downstream.



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To ensure
long and efficient
service from your tractor
use only

spare parts

recommended lubricants

THE FOLLOWING SECTION IS AN ADDENDUM TO THE OPERATORS MANUAL AND ALL ITEMS LISTED MUST BE EXPLAINED AND/OR CARRIED OUT BY YOUR DEALER

Tractor Transfer To Customer:

Contains key information to be explained by a dealer engineer, concerning safety, servicing and operation of your tractor.

NOTE: *This explanation DOES NOT replace any information given in this Operators Manual. The Operators Manual contains in-depth procedures on the safe operation, adjustment and servicing of a McCormick tractor.*

Once the transfer of the tractor to you has been completed, the dealer engineer should stamp and sign both your and their copy page and also obtain your signature for verification.

First 50 Interim Service (After Delivery Service):

The First 50 Hour After Delivery Service SHOULD be carried out by the dealer after the first 50 hours of tractor operation or at least within the First 100 Hours. The dealer should stamp and sign both your and their copy page for verification.

Second 250 Interim Service (After Delivery Service):

The Second 250 Hour After Delivery Service SHOULD be carried out by the dealer after the first 250 hours of tractor operation, or before 12 months after the date of purchase, which ever comes firsts. The dealer should stamp and sign both your and their copy page for verification.

Service Records:

After each service the relevant information has to be recorded and signed in order to safeguard any possible later warranty claims. A duly stamped service record is also proof of compliance with the terms of the optional "McCORMICK CARE" extended warranty. All services are to be performed according to this Operators Manual and the Service Manual, as well as exclusively with original McCormick filters and spare parts and McCormick released oils, lubricants, coolants, etc.

FOR WARRANTY CONDITIONS THE MAIN SERVICE, AT EVERY 1000 HOURS, MUST BE CARRIED OUT BY AN AUTHORIZED DEALER.

TRACTOR TRANSFER TO CUSTOMER

Your own safety and the safety of others largely depends on the condition of your machine. Hence, the following must be checked at regular intervals:

ROAD SAFETY

Brake System.

Lighting:
(Turn signal indicators lamps, Hazard warning lamps, brake lamps etc.).

Condition of windscreen wiper blades and windshield washer reservoir level.

OPERATIONAL RELIABILITY

DAILY MAINTENANCE:

Fluid levels:
(transmission/hydraulic, fuel, coolant, etc.).

ONCE A WEEK OR EVERY 50 HOURS OF ENGINE OPERATION:

Lubricate all front axle grease points.

Tyre inflation pressures.

Drain fuel filter.

Check condition of air filter dust valve.

Clean grille screens and radiator area.

Clean cab air recirculation filter.

The tractor transfer to the customer should contain a comprehensive explanation of all points concerning safety, operation and maintenance of a McCormick tractor and should be conducted by a dealer representative.

THE DEALER SHOULD DRAW SPECIAL ATTENTION TO ALL THE WARRANTY CONDITIONS!

The dealer representative should conduct the transfer in line with the instructions on the following pages and by referring back to the instructions given in this Operators Manual. The representative must tick each item (on the following pages) in the space provided and stamp and sign both your and their verification copies, at the end of this section, when the transfer is complete.

TRACTOR TRANSFER/SERVICE RECORDS

1. Safety - (Importance of:)

1. Understanding safety/warning symbols and safety regulations. ☐
2. Not removing protective guards and decals. ☐
3. Learning and practicing the operation of the tractor in a safe, clear area, prior to using the tractor for the first time. ☐
4. Putting all levers and switches in neutral position prior to starting the engine. ☐
5. Turning engine off and removing the key before starting any maintenance work. ☐
6. Turning engine off and removing the key before leaving the tractor. ☐
7. Noting the axle weights and the permissible overall weight of the tractor when attaching implements and trailers. ☐
8. Operating the PTO. No-one must be allowed to remain in the vicinity of the rotating PTO stub shaft or drive shaft. ☐
9. Checking the torque of front and rear wheel bolts/nuts (after first 30 minutes, then every 10 hours of operation until torques stabilize). ☐
10. Road travel, make sure correct lighting and equipment is fitted, apply the brake pedal interlock and make sure local Police approval has been given if the overall width of tractor and/or attachment is greater than 3000 mm. ☐
11. Always comply with local traffic regulations when driving on public roads. ☐
12. Before moving away, always check the immediate vicinity of the machine, (e.g. for children). Ensure adequate visibility. ☐
13. Maintaining the tractor in good condition by having regular prescribed services. ☐
14. Do not service the tractor with the engine running. ☐
15. Always dispose of oil, fuel and filters in accordance with local regulations. Do not drain the oil onto the ground or into a drain. Be responsible for the environment. ☐

2. Servicing

1. Open hood. ☐
2. Check drive belt(s) for correct tension. ☐
3. Check engine oil level. ☐
4. Check coolant level. ☐
5. Squeeze the dust valve to release any dust from the engine air filter. ☐
6. Check fuel system (drain, bleed and fill tank). ☐
7. Clean front/side grille screens and radiator area. ☐
8. Check transmission/hydraulic oil. ☐
9. Indicate location of all grease fittings and correct lubrication intervals. ☐
10. Explain the importance of using original Spare parts/Service parts. These parts must comply with McCormick technical specifications. ☐

3. Instruments and Levers (Location and Operation)

1. Driver's seat adjustment, Operator Presence Switch and seat belt. ☐
2. Steering column (tilt and telescopic) adjustment. ☐
3. Instrument panel/control lights/master warning light/light switches. ☐
4. Location of fuses - left hand side of instrument panel. ☐
5. Location of relays - refer to Operators Manual. ☐
6. All other controls and switches. ☐

4. Starting and Stopping the Tractor

1. Keyswitch operation, (with all levers and switches in neutral). ☐
2. Cold start procedure. ☐
3. Brake pedal, (for road travel brake pedal interlock must be engaged). ☐
4. Always apply the park brake after stopping the tractor. ☐

5. Transmission

1. How to operate the transmission. ☐
2. How to operate the Creeper speed, (if equipped). ☐
3. How to engage/disengage the Differential lock. ☐
4. How to engage/disengage 4WD, (if equipped). ☐

6. Hydraulics

1. How to operate all controls. ☐
2. How to operate rear external remote control, (if equipped). ☐
3. How to operate pick-up hitch, (if equipped). ☐
4. How to operate front hitch, (if equipped). ☐

7. Power Take-off - (Front and Rear)

1. How to engage and disengage the PTO. ☐
2. How to change PTO speeds, (if applicable) ☐
3. Importance of PTO guard usage. ☐

NOTE: *Some items listed may differ to the standard equipment and accessories depending upon market and country requirements.*

Please complete this chart and retain for **CUSTOMER** verification.

TRACTOR TRANSFER TO CUSTOMER

CUSTOMER COPY

Model:	P.I.N.:
Dealer/Stamp:	Customer:
Print Name:	Print Name:
Signature:	Signature:
Transfer Date:	
Additional Comments:	

McCORMICK
TRACTORS INTERNATIONAL LTD

McCORMICK

Please complete this chart and retain for **DEALER** records.

TRACTOR TRANSFER TO CUSTOMER

DEALER COPY

Model:	P.I.N.:
Dealer/Stamp:	Customer:
Print Name:	Print Name:
Signature:	Signature:
Transfer Date:	
Additional Comments:	

McCORMICK
TRACTORS INTERNATIONAL LTD

McCORMICK

FIRST 50 HOUR & 250 HOUR INTERIM SERVICE (AFTER DELIVERY SERVICE)

All the following checks and tasks MUST be carried out by the dealer engineer. The engineer must tick each item in the space provided under the relevant service interval and stamp and sign both your and their verification copies, at the end of this section, when the service is complete.

A. EXTERNAL CHECKS AND TASKS

Front of Tractor

	50 Hrs	250 Hrs
Check oil in differential and planetaries.	☐	☐
Lubricate all axle grease points.	☐	☐
Check toe-in.	☐	☐
Check tire pressures.	☐	☐
Change engine oil.	☐	☐
Change engine oil filter.	☐	☐
Check coolant level in radiator and recovery reservoir. Check for coolant, fuel and oil leaks. Check all fittings/connections on fuel system, cooling system, air intake and exhaust are tight. Tighten if necessary. Check condition of Air Intake Hoses.	☐	☐
Clean grille screens, radiator, condenser and oil cooler, (if equipped).	☐	☐
Check Engine Air Filter Dust Valve, (if equipped). Squeeze to remove dust.	☐	☐
Drain fuel filter water trap.	☐	☐
Drive belts - Check condition and tension.	☐	☐
Check torque of all wheel bolts/nuts:	☐	☐
Check tightness of all engine fittings/ connections, nuts, bolts and hose clips etc. Tighten if necessary.	☐	☐

A. EXTERNAL CHECKS AND TASKS

Center of Tractor

	50 Hrs	250 Hrs
Check battery electrolyte level.	☐	☐
Check that the battery cable connections are clean and tight.	☐	☐
Check the battery is securely located.	☐	☐
Check security of all cab/platform mounting bolts.	☐	☐
Clean the intake and recirculation air filters in the cab.	☐	☐
Air cleaner - Check warning indicator light.	☐	☐

Rear of Tractor

Lubricate all Rear Hitch grease points.	☐	☐
Check torque of Drawbar Support Bracket bolts.	☐	☐
Check Trailer Hitch Bolts torque, (if equipped).	☐	☐
Drain Pneumatic Trailer Brake Air Reservoirs, (if equipped).	☐	☐
Check transmission oil level, replenish if necessary.	☐	☐
Check windscreen washer fluid level.	☐	☐

B. OPERATIONAL CHECKS

Test drive tractor and check the following:	**50 Hrs**	**250 Hrs**
Check starting aid operation, (if equipped).	☐	☐
Check all instruments, gauges and warning lights.	☐	☐
Check front and rear windscreen washer/wiper operation.	☐	☐
Check Low and High idle speeds are obtainable with both hand and foot throttle.	☐	☐
Check all lights operate correctly.	☐	☐
Check operation of transmission controls.	☐	☐
Check clutch operation, adjust if necessary.	☐	☐
Check operation of the brakes.	☐	☐
Check park brake, adjust if necessary. Park brake lever should move no more than 3-4 notches to hold tractor. Master warning light should illuminate if keyswitch is in the ON position.	☐	☐
Check Differential Lock engagement/ disengagement.	☐	☐
Check engagement/disengagement of the 4WD, (if equipped).	☐	☐
Check PTO operation.	☐	☐
Check operation of three point hitch, adjust if necessary.	☐	☐
Check operation of pick-up hitch, (if equipped), adjust if necessary.	☐	☐
Check operation of all other attachments,(as equipped) adjust if necessary.	☐	☐

C. GENERAL

	50 Hrs	**250 Hrs**
Check complete tractor for any oil/ fluid leaks.	☐	☐
Check all fittings/connections on hydraulic system, steering system, brake lines and that all external nuts and bolts are tight, tighten if necessary.	☐	☐
Lubricate all grease fittings. Lubricate all control linkages, threads, bolts, pins and cables etc. with oil.	☐	☐
Check all wiring harnesses are correctly secured.	☐	☐

NOTE: *Once this first 50 Hour and 250 Hour Interim Service (After Delivery Service) have been completed all further interim services should be done at the regular intervals (shown on the following pages) by either the dealer or customer as preferred,* ***however the 1000 hour Main Service, due to Warranty conditions, MUST be carried out by your authorized Dealer****.*

Please complete this chart and retain for **CUSTOMER** verification.

FIRST 50 HOUR INTERIM SERVICE (AFTER DELIVERY SERVICE)

CUSTOMER COPY

Job Number:	
Machine Hours:	
Parts/Fluids Used:	
Dealer/Stamp:	Customer:
Print Name:	Print Name:
Signature:	Signature:
First 50 Hour Interim Service Date:	
Additional Comments:	

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Please complete this chart and retain for **DEALER** records.

FIRST 50 HOUR INTERIM SERVICE (AFTER DELIVERY SERVICE)

DEALER COPY

Job Number:	
Machine Hours:	
Parts/Fluids Used:	
Dealer/Stamp:	Customer:
Print Name:	Print Name:
Signature:	Signature:
First 50 Hour Interim Service Date:	
Additional Comments:	

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Please complete this chart and retain for **CUSTOMER** verification.

FIRST 250 HOUR INTERIM SERVICE (AFTER DELIVERY SERVICE)

CUSTOMER COPY

Job Number:	
Machine Hours:	
Parts/Fluids Used:	
Dealer/Stamp:	Customer:
Print Name:	Print Name:
Signature:	Signature:
First 250 Hour Interim Service Date:	
Additional Comments:	

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Please complete this chart and retain for **DEALER** records.

FIRST 250 HOUR INTERIM SERVICE (AFTER DELIVERY SERVICE)

DEALER COPY

Job Number:	
Machine Hours:	
Parts/Fluids Used:	
Dealer/Stamp:	Customer:
Print Name:	Print Name:
Signature:	Signature:
First 250 Hour Interim Service Date:	
Additional Comments:	

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SERVICE RECORDS

After each service the relevant information has to be recorded and signed in order to safeguard any possible later warranty claims. All services are to be performed according to this Operators Manual and the Service Manual, as well as exclusively with original McCormick filters and spare parts and McCormick released oils, lubricants, coolants, etc.

1st Annual Service or at 500 Hours	Job No.
Date:	Machine Hours:
Dealer/Stamp:	Customer:
Signature:	Signature:

2nd Annual Service or 1000 Hours Main Service	Job No.
Date:	Machine Hours:
Dealer/Stamp:	Customer:
Signature:	Signature:

3rd Annual Service or at 1500 Hours	Job No.
Date:	Machine Hours:
Dealer/Stamp:	Customer:
Signature:	Signature:

4th Annual Service or 2000 Hours Main Service	Job No.
Date:	Machine Hours:
Dealer/Stamp:	Customer:
Signature:	Signature:

5th Annual Service or at 2500 Hours	Job No.
Date:	Machine Hours:
Dealer/Stamp:	Customer:
Signature:	Signature:

6th Annual Service or 3000 Hours Main Service	Job No.
Date:	Machine Hours:
Dealer/Stamp:	Customer:
Signature:	Signature:

7th Annual Service or at 3500 Hours	Job No.
Date:	Machine Hours:
Dealer/Stamp:	Customer:
Signature:	Signature:

8th Annual Service or 4000 Hours Main Service	Job No.
Date:	Machine Hours:
Dealer/Stamp:	Customer:
Signature:	Signature:

9th Annual Service or at 4500 Hours	Job No.
Date:	Machine Hours:
Dealer/Stamp:	Customer:
Signature:	Signature:

10th Annual Service or 5000 Hours Main Service	Job No.
Date:	Machine Hours:
Dealer/Stamp:	Customer:
Signature:	Signature:

11th Annual Service or at 5500 Hours	Job No.
Date:	Machine Hours:
Dealer/Stamp:	Customer:
Signature:	Signature:

12th Annual Service or 6000 Hours Main Service	Job No.
Date:	Machine Hours:
Dealer/Stamp:	Customer:
Signature:	Signature:

13th Annual Service or at 6500 Hours Interim Service	Job No.
Date:	Machine Hours:
Dealer/Stamp:	Customer:
Signature:	Signature:

14th Annual Service or 7000 Hours Main Service	Job No.
Date:	Machine Hours:
Dealer/Stamp:	Customer:
Signature:	Signature:

15th Annual Service or at 7500 Hours Interim Service	Job No.
Date:	Machine Hours:
Dealer/Stamp:	Customer:
Signature:	Signature:

16th Annual Service or 8000 Hours Main Service	Job No.
Date:	Machine Hours:
Dealer/Stamp:	Customer:
Signature:	Signature:

McCORMICK

The name says it all

An excellent heritage

The McCormick brand is a true classic in the manufacture of agricultural machinery and equipment. From the world's first ever practical reaper in 1831 through the long and distinguished line of tractors that followed, the McCormick badge epitomised quality, craftmanship and innovative design. Now the name that pioneered a transformation in agricultural efficiency for more than a century and a half is reborn.

A wealth of experience

What home could be more fitting for the new generation of McCormick tractors then Doncaster, England. Manufacturing is based at a plant which itself has a long and distinguished track-record of tractor production. The award-winning workforce is highly skilled and experienced. Who better to breathe a new life into the McCormick legend.

A commitment to quality

The McCormick tractors of the 21st century remain true to the values and principles that made McCormick a world-beater for so many years. That means no compromises in quality. It ensures strict compliance with some of the most demanding manufacturing standards in the industry. And, not least, it heralds a renewed mission to achieve ever-increasing productivity levels for our customers.

Renowned reliability

McCormick tractor users from yester-year still happily relate stories of their unrivalled reliability and appetite for work. Whilst, technologically, the new generation of machines bear little resemblance to their predecessors, they are every bit as dependable - and more so. Every single working part is designed to last - even in the most punishing environments. Hour after hour, day after day, out in the filed or in the yard, a McCormick tractor won't let you down.